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EDISON BULLETIN

EDISON ELECTRIC INSTITUTE

SALES CONFERENCE NUMBER

APRIL, 1938

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EDISON ELECTRIC INSTITUTE

STATISTICAL DATA OF THE ELECTRIC LIGHT AND POWER INDUSTRY

SOURCE AND DISPOSAL OF ENERGY AND GENERATING FACILITIES

	1937[a]	1936	Per Cent 1937/1936	1935	1934
Generation	**Source of Energy**				
By Steam	74,206,276,000	68,423,015,000	+ 7.0	55,197,445,000	53,106,321,000
By Water Power	40,959,360,000	37,230,590,000	+10.0	36,543,567,000	31,069,116,000
By Internal Combustion	(b)	912,708,000	..	870,411,000	810,395,000
Total Generation	115,165,636,000	106,566,313,000	+ 8.1	92,611,423,000	84,985,832,000
Net Purchased Energy					
Net Purchases from Other Sources	3,429,001,000	2,065,384,000	+66.0	2,351,360,000	2,474,415,000
Net Purchases Over International Boundaries	1,215,711,000	1,053,661,000	+15.4	901,098,000	892,905,000
Total Purchased Energy	4,644,712,000	3,119,045,000	+48.9	3,252,458,000	3,367,320,000
Total Net Input	**119,810,348,000**	**109,685,358,000**	**+ 9.2**	**95,863,881,000**	**88,353,152,000**
	Disposal of Energy				
Total Sales to Ultimate Customers	99,446,364,000	90,044,265,000	+10.4	77,596,025,000	71,081,598,000
Energy Used by Company					
Used by Electric Railway Department	617,955,000	620,482,000	− 0.4	592,762,000	637,873,000
Used by Electric and Other Coordinate Departments	1,704,948,000	1,655,763,000	+ 3.0	1,575,563,000	1,515,237,000
Total Company Use	2,322,903,000	2,276,245,000	+ 2.0	2,168,325,000	2,153,110,000
Losses and Energy Unaccounted for	18,041,081,000	17,364,848,000	+ 3.9	16,099,531,000	15,118,444,000
Total Net Output (To Check Above Input)	**119,810,348,000**	**109,685,358,000**	**+ 9.2**	**95,863,881,000**	**88,353,152,000**
Type of Prime Mover	**Kilowatt Generating Capacity on December 31st**				
Steam Turbines and Steam Engines	24,637,926	24,106,618	+ 2.2	23,989,227	23,780,148
Water Wheels and Turbines	9,634,014	9,538,640	+ 1.0	9,288,537	9,140,690
Internal Combustion Engines	688,381	614,813	+12.0	610,541	603,633
Total Generating Capacity (Kw)	34,960,321	34,260,071	+ 2.0	33,888,305	33,524,471

NUMBER OF CUSTOMERS, KWHRS SOLD AND REVENUE BY CLASS OF SERVICE

Classification of Services	1937[a]	1936	Per Cent 1937/1936	1935	1934
	Number of Customers on December 31st				
Farm	1,241,505	1,042,924	+19.0	788,795	743,954
Residential	21,697,515	20,987,440	+ 3.4	20,446,436	19,866,008
Commercial—Small Light and Power	3,891,584	3,825,289	+ 1.1	3,710,771	3,670,419
Commercial—Large Light and Power	259,678	280,024		304,592	323,527
Municipal Street Lighting	35,687	33,763	+ 5.7	30,961	30,811
Street and Interurban Electric Railways	262	298	−12.1	309	342
Electrified Divisions and Steam Railroads	27	33	−18.2	31	34
Municipal and Miscellaneous	37,729	36,108	+ 4.5	30,907	27,733
Total Ultimate Customers	27,163,987	26,205,879	+ 3.7	25,312,802	24,662,828
	Kilowatthours Sold				
Farm	2,389,304,000	2,138,456,000	+11.7	1,692,398,000	1,857,454,000
Residential	16,875,489,000	14,992,056,000	+12.6	13,496,232,000	12,232,748,000
Commercial—Small Light and Power	17,557,951,000	15,611,689,000	+10.6	13,588,086,000	12,277,516,000
Commercial—Large Light and Power	53,546,370,000	48,655,166,000		40,864,683,000	36,943,526,000
Municipal Street Lighting	2,396,784,000	2,222,197,000	+ 4.7	2,077,671,000	1,896,310,000
Street and Interurban Electric Railways	4,450,243,000	4,400,927,000	+ 1.1	4,193,707,000	4,236,649,000
Electrified Divisions and Steam Railroads	1,265,341,000	1,115,457,000	+13.4	840,841,000	692,340,000
Municipal and Miscellaneous	1,034,882,000	908,317,000	+13.9	842,407,000	945,055,000
Total Kwhrs Sold to Ultimate Customers	99,446,364,000	90,044,265,000	+10.4	77,596,025,000	71,081,598,000
	Revenue				
Farm	$67,947,300	$59,286,300	+14.6	$48,404,600	$49,182,600
Residential	740,218,600	696,997,400	+ 6.2	673,526,100	648,801,500
Commercial—Small Light and Power	604,848,500	562,122,100	+ 6.7	519,213,100	490,420,200
Commercial—Large Light and Power	615,048,900	581,148,800		531,106,600	499,451,700
Municipal Street Lighting	83,088,100	80,791,900	+ 2.8	79,429,500	81,846,600
Street and Interurban Electric Railways	37,541,800	37,423,900	+ 0.3	36,431,300	36,402,300
Electrified Division and Steam Railroads	10,670,800	9,591,300	+11.3	7,944,100	6,680,300
Municipal and Miscellaneous	21,423,600	17,225,200	+24.4	15,933,600	19,085,300
Total Revenue from Ultimate Customers	$2,180,787,600	$2,044,586,900	+ 6.7	$1,911,988,900	$1,831,870,500

[a] *Subject to change following 1937 Census of Electrical Industries.* [b] *Included with steam generation.*

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 6 APRIL, 1938 No. 4

Fifth Annual Sales Conference

Interest Grows Like the Proverbial Snowball

By C. E. Greenwood

Commercial Director, Edison Electric Institute

"TOPS them all" is the consensus of opinion of the Fifth Annual Sales Conference of Edison Electric Institute. In the midst of adversities of business recession over five hundred men and a few of our business women from 36 states and Canada gathered at the Edgewater Beach Hotel, Chicago, March 29th through April 1st, attracted by a program of timely subjects and authoritative speakers. It is gratifying that each year the scope of these annual conclaves has broadened and extended their usefulness to the commercial forces of the industry.

Many obstacles confront today the men responsible for producing and holding new business, prominent among which are narrowing markets and limited capital for promotional purposes. The basic requirements for meeting these obstacles, such as surveys, analysis of profitable loads, selective selling, planned promotion and mass attack, dealer coordination and consideration of future loads, all gained the attention of the speakers. There were forty platform presentations during the four-day sessions, and it is sincerely regretted that comparatively few of the papers could be selected for this special Conference Number of the BULLETIN. Other papers will appear in later issues or in other publications.

David M. DeBard, Vice President, Stone and Webster Service Corporation, and Chairman of the Sales Committee, was the chief presiding officer of the Conference.

There were two afternoon sessions devoted to present National Promotional Programs, one on Better Light-Better Sight at which M. E. Skinner, Vice Chairman of the Sales Committee and Chairman of the Better Light-Better Sight Bureau presided. From that session we publish in these columns the address of two guest speakers from without the industry—Mrs. Winifred Hathaway, Associate Director of the National Society for the Prevention of Blindness, and Dr. H. E. Pine, President of the American Optometric Association—both of whom made valued contributions to the cause of correct lighting for the public. All papers of this session are being published currently in the *Better Light-Better Sight News* which has wide distribution.

Another session outlined progress of the Modern Kitchen promotion at which G. E. Whitwell, Vice Chairman of the Sales Committee and Chairman of the Modern Kitchen Bureau presided. Not only was the value of the electric kitchen equipment load featured, but a check-up of progress in promotion of the program in different sections of the country as indicated in the reports of the Regional Directors showed that the first two years' effort had taken root, and that the activity is forging ahead. A symposium of the Kitchen Bureau session will appear in a later issue of the BULLETIN. Papers by R. R. Herrmann and C. E. Swartzbaugh appear in this issue.

It is of incidental interest that one of the outstanding presentations on Broadening Home Service Activity by Miss Sarah Harding Hunter of the Electrical League of Cleveland, is unavoidably delayed in publication.

In a Huddle Following Conference Formal Luncheon

(Left to right), R. E. Fisher, J. E. Davidson, C. W. Kellogg, D. M. DeBard, G. E. Whitwell, C. E. Greenwood, M. E. Skinner

Following customary practice Monday, March 28th, the day preceding the Conference, was left open for meetings of our organizational committees. It was a busy day for Chairmen and members. The results of these meetings will be recorded in reports that will be published for the benefit of member companies.

Of special note is the Annual Commercial Cooking Survey made this year under the auspices of the Commercial Electric Cooking Council. The Chairman of the Council, P. M. Alden, pointed out in his presentation the value of this high load factor business to the utilities and explained the national activity now being carried through by the Council which is jointly sponsored by Edison Institute and the Food Equipment Section of NEMA. Mr. Alden's paper will appear in the April issue of *Electric Light and Power* including the Survey. Reprints will be circulated.

The same evening, March 28th, the Sales Committee had its dinner meeting at which progress reports of the Committee were heard and subjects of moment along the lines of sales development were discussed. It was after ten o'clock when an interesting Agenda was completed and Chairman DeBard adjourned the meeting.

A high spot of the week's activity was the formal luncheon on Wednesday, March 30th, at which Mr. Kellogg, Chairman of Engineers Public Service and President of Edison Electric Institute, was the only speaker. M. E. Skinner who presided at the luncheon introduced Mr. Kellogg to a gathering of nearly three hundred persons. His address which is printed in other columns of this issue was enthusiastically received. It is deserving of comment that the President of the Institute, who has pressing demands on his time would give us the privilege of his attendance at the

MR. GREENWOOD

Sales Committee dinner and at the Conference sessions.

The problems of the power engineers were discussed on the last day of the Conference. There were approximately 150 utility men attending the closed sessions on Friday, April 1st. The practice of assigning a full day for the intimate discussion of matters of concern to the commercial executives and power salesmen is justified by the production of papers outlining test cases and experience data. Open discussion is a feature of these closed meetings and a clearing house of ideas results. A. D. McLay's address is printed elsewhere in this issue. Obviously some of the papers in this session will not be available for publication. Others will be released later.

In this brief chronicle of events an expression of appreciation goes to the men and women who performed in "A PAGEANT AND A PROPHECY" which M. N. Waterman, Chairman of the Lighting Sales Committee of the Institute, offered to visualize progress in lighting technique and in sales. The story was told in an impressive and interesting manner. Let it be known, since it was not on the program, that the scenario was by Mr. Waterman, the crystal gazer and scientist was H. F. Barnes of General Electric Company, Cleveland, and J. H. Devereaux, Public Utility Engineering and Service Corp., was stage director. Our appreciation for assistance is also extended to the Westinghouse Lamp Division of Westinghouse Company, to the Chicago Lighting Institute and to the manufacturers of lighting equipment who loaned apparatus.

Another feature, not on the program, was the surprise that Harris E. Dexter gave to his audience. Following his presentation of the subject RUNNING WATER—YOUR FAMILY DESERVES IT, Mr. Dexter produced a farmer from Poughkeepsie, a customer who had the service and told what it had done for him. Mr. Wigsten's knees may have shaken, as he stated, but there was no shakiness in his thoughts and in the relation of his experience.

The Exhibit of promotional materials available in connection with the four national programs operated by the Institute, two of them jointly with NEMA, was more impressive than ever. Deserving of special mention was the Exhibit of IES Better Sight Lamps before an elaborate painting depicting the Evolution of Lighting.

And one more thought—we would not forget that "Ash" Collins, guide and mentor of Reddy Kilowatt, was present and his Candid camera was working so that we can offer a few intimates of some of those in attendance.

Yes—it was a profitable week, because men who attended had full opportunity to take home with them new ideas and inspirations for further development of the business.

(1) Charlie Michel (center) tells one to Jim Davidson while Frank Coffin (left) listens in—(2) Charlie Eastman at ease—(3) Charlie Collier with George Mason, President, Nash-Kelvinator (right) and W. F. Armstrong, Vice-President

Do Your Executives Know?

By Davis M. DeBard

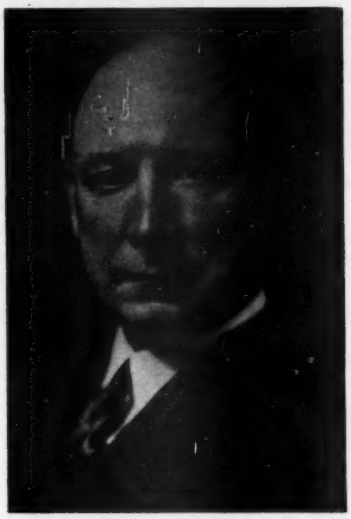
Stone & Webster Service Corporation, New York, N. Y.
Chairman Sales Committee, Edison Electric Institute

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

THE EDISON ELECTRIC INSTITUTE is the trade association of the electric utility business. It maintains a courteous and highly competent headquarters staff in New York. This staff assists the volunteer committees made up of its members in the dissemination of facts and promotional plans which are of common interest to all utilities. Through the work of these volunteer committees, the thoughts and experience of hundreds of the ablest men in the industry are made available to all operating companies. In the Sales Division alone the efforts of more than 200 men and women working on various activities are providing a storehouse of information and promotional material available to operating companies throughout the country. I am confident that the committee members have gained both pleasure and profit from doing this work, but if their efforts are to be useful to the electrical industry, it will be because you and your executives make full use of the information to develop more effective sales programs in the communities which you serve.

I have talked with many operating executives throughout the country and find them woefully uninformed of the volunteer committee work being done in their behalf. I, for one, believe it is a duty of every sales executive to keep his associates informed of the research work and promotional plans being attempted by the various sales committees. We try to get this information out through the telephone, the telegraph and the teletype. We do not use the one effective means by which information travels the fastest, and that is—tell a woman.

Many of the committee chairmen appear during the next few days on our program. Had time permitted, we would have been well repaid to have complete reports from them all. In arranging such a program, only a limited number of worth while subjects of vital interest can be covered. Make notes that you might better inform your associates and operating executives on your return home, the work that the Sales Committee has accomplished.



MR. DEBARD

I wonder if you know that the manufacturers have agreed to contribute more than $400,000 to our cooperative programs this year and that each manufacturer's dollar will be matched approximately ten to one by the utilities locally. These committee activities work to the mutual interest of both manufacturer and utility and are to be encouraged. Such movements planned by joint committees —sponsored by the executives of the industry—fostered by the operating companies and by the manufacturers—merchandised to the dealers and sold to the employes, result in adding profitable load to our lines to the mutual benefit of customer, utility, manufacturer and dealer.

Later in the program you will hear more of these cooperative programs and can better judge the splendid good will that exists between the utility industry and its manufacturing friends.

Air Conditioning

The President of a large air conditioning manufacturing company made the statement recently that one million horsepower was required to operate air conditioning apparatus installed today, and that during the next ten years, more than nine million additional horsepower will be required for new installations. The utility industry is aware of the problem which affects their distribution and generation system. Air conditioning apparatus operates at such a low load factor that returns to the utility in many cases are inadequate. It is gratifying to note that through the committee efforts the manufacturers are devoting research to this problem and are developing storage systems to lessen the demand and improve the load factor. Last year the manufacturers of air conditioning equipment had the peak year of their business and there is every indication that 1938 will equal, if not exceed, the output of 1937.

Very encouraging is the marked improvement in Room Coolers. Not only are they more fool-proof in construction but prices are lower. The leading manufacturers have an excellent product now on the market and plan extensive promotion. I would like to recommend to next year's Sales Committee that consideration be given for a national activity on the promotion of Room Coolers. For the office and the living room, it offers summer comfort at a moderate price. The ventilating portion of the load gives us long hours of use. In fact, the ventilating in general offers large potentialities in the residential and commercial field. The so-called Desert Cooler as used in the Southwest where altitudes are high, and the attic fan throughout the South, make satisfied customers wherever they are properly installed.

Wiring

In the launching of the National Adequate Wiring Program which was developed by the National Electrical Manufacturers Association, wiring is receiving much needed attention. The Chairman of the Bureau, Mr. Sprackling, is to speak on Wednesday morning and will cover the subject. Utilities have long been interested in technical developments in wiring and its promotion. We have been interested both in the adequacy in copper and the number

of outlets. We willingly joined this important industry development.

It is notable that the basis of the Certification Program which supplements the national activity is based on the domestic specification in the Handbook of Interior Wiring Design developed by a Joint Industry Committee under Mr. E. A. Brand of Buffalo, New York, as Chairman. Thirty-seven thousand copies of this Handbook have been printed and distributed to date and a further edition of ten thousand copies is just off the press. This in itself is evidence of the interest in the wiring problem.

We shall be hopeful that new methods of wiring will be developed which will bring about lower cost to the consumer and result in more jobs and greater profit to the electrical contractor.

Home Service

The utility depends on its home service workers for developing that all-important use of electrical equipment. A survey among 54 operating companies indicated a total of 504 home service workers employed—one home service worker per 7,500 customers.

It is of particular interest that most of these companies have hired women with college training in home economics to perform this important contact in the home. Of the 36 companies that conduct lighting service activities with women contacts, 17 companies use the same women for lighting service as for educational work in connection with other devices in the home. There is a job ahead in putting the many appliances in the home that are now idle to work again and the process of education must go on. The Home Service Department is the key to this company activity. We are to hear more about Home Service later in our program.

Financing

A complete report on the activity of utility companies in connection with the financing of electric equipment was published last year under a committee headed by Mr. C. L. Harold of Brooklyn. During the past year the subject has gained wide attention from several sources interested in installment payments. Finance companies raised the issue of the economic soundness of selling electric equipment with terms extending beyond 24 months. Some utility companies have adjusted to these terms while others have continued to extend beyond the 24 months' period. I am advised that some finance companies are making their terms more flexible. I am also advised that local banks throughout the country are becoming more and more interested in financing both dealer and utility sales on terms extending up to 48 months. Many records will prove that customers who have been extended credit over long terms, and required to pay low monthly payments, have continued their obligations far better than customers placed on shorter terms with high monthly payments.

Title I of the National Housing Act has made it possible to finance under contracts insured by FHA—wiring, lighting, oil burners, air conditioning and electric water heaters for the home. The term of financing is as long as five years. This makes it possible to liberalize again the terms on these particular items.

With such a large percentage of our sales consummated on the installment plan, this subject is of importance to every operating company.

Rural

Thousands of customers have been added to the power company lines and many are faced with the big problem of getting adequate return in revenue. The first essentials are lighting and running water. The program of the Electric Water Systems Council, now in its fifth year, is making a substantial contribution through the promotion of running water in rural and semi-rural communities. The Rural Sales Committee has recommended similar activities be developed for the promotion of other important services.

Merrill Skinner prepares to introduce the President at the Conference Luncheon—Jim Davidson in foreground

Attention is called to the present *Rural Electrification Exchange* which is the mouthpiece of the Rural Sales Committee. It appears this year in printed form and in new dress and has been most favorably received. There will be four quarterly issues. Every utility member of the EEI receives two copies gratis. A small subscription charge is made for additional copies. Subscriptions are welcome from manufacturers and every one interested in rural electrification development. There is a big job ahead in load building on rural lines.

Time does not permit the review of each committee's activity. Many of the Chairmen will appear on the program during the next few days. Suffice to say that their contributions have been of importance to the industry and we should all be grateful for the time and energy expended by these committees in our behalf.

In conclusion, the year 1937 resulted in a splendid load building year for most companies. General business conditions, due to factors beyond our control, are not as bright as they were at this time a year ago. With the farmers having a greater supply of grain, cotton and livestock; with the manufacturers in position to produce splendid eye-appealing, quality appliances; with the banks looking for opportunities to invest their surplus funds; I, for one, cannot help but feel, in spite of many obstacles, utility load building, especially in the residential field, should go forward at a rate comparable with last year, provided we do not lessen our promotional efforts. There was never a time when committee work and get-together meetings such as these were so important. To know by the experience of other companies what to do and what not to do, eliminates experiment, expense and costly errors. It has been the policy of the utility industry for many years to pass on to the consumer in the form of rate reductions such savings that have accrued from better planning and management. These rate reductions have amounted to many millions of dollars. Executives have gained their inspiration and many of their thoughts from reports of committees and conferences such as is being held here this week. I am confident that both you and your ultimate consumer will be benefited from the program in which you are to participate during the next few days.

The Electric Utilities in the Depression Years

By C. W. Kellogg
President, Edison Electric Institute

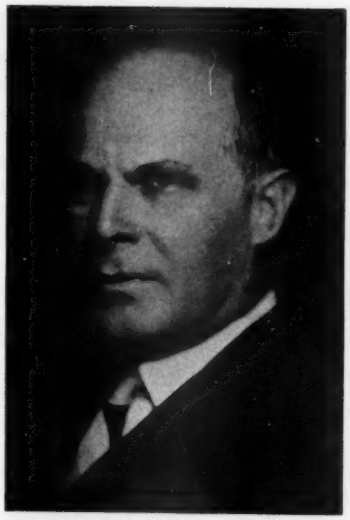
An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

IT is a source of tremendous satisfaction and pleasure to be able to speak to this large and enthusiastic gathering devoted to the commercial development of our great humanity-serving industry. Sales effort is probably the greatest influence tending to lift our industry above the mere repetitive routine of service, thorough and devoted though that service may be, to the high level of a vigorous, growing organism. Growth is the concomitant of life and this life which your sales efforts produce infuses health into the entire fabric of the industry.

In analyzing the nature of the growth of the electric utility industry during the past year, it is most encouraging to observe that the development was the result not only of greater use by existing customers, but was due also to a substantial gain in the number of customers. We may be justly proud of having in one year increased the average residence consumption of electricity per customer from 727 to 797, or about 10%, with a reduction in average residence rate per kilowatt hour of 6%, but it is gratifying also to record a gain for the year of nearly 800,000 in the number of electric customers.

A somewhat longer look back to the beginning of the great depression (which we may call approximately the end of 1929) makes a still more striking showing. During that 8-year period the national income dropped from 79 billions, its all-time high, in 1929 to 68 billions in 1937—a decrease of 14%. The index of industrial production at the end of this period stood at a point fully as much below its 1929 value. Yet during these same eight years we added 2,850,000 customers to our lines, a gain of 12%, increased the average energy consumption of electricity in the home 67%, and cut the average kilowatt hour rate in the home over 30%.

I mention these outstanding accomplishments during the depression, and contrary to the general trend of affairs, in no spirit of braggadocio, but rather to remind you what you have done under relatively unfavorable conditions so as to encourage you to the continuation of enthusiastic effort in the future.



MR. KELLOGG

May I remind you also that these results were shown by a privately-owned industry using the incentive of individual initiative. I mention this because of the claims that have been advanced in recent years by propagandists for government ownership to the effect that the admittedly excellent record achieved by the privately-owned electric utilities has been due to the stimulus of government competition, actual or threatened. An analysis of the record does not bear out these government claims.

Let us take the decade from the end of 1927 to the end of 1937. It was at the beginning of this decade that the electric industry (not the government) devised and gradually installed the inducement rates for electricity in the home. The decade divides itself into two equal parts with the end of 1932, thus respectively pre-New Deal and New Deal. Let us see if we can discover from the record of the decade any evidence of the effect of the example or threat of government competition. In the matter of average residential rates, the total cut through the decade was 2.43 cents per kwhr. Of this total cut, 1.25 cents, or 50.5%, was made in the pre-New Deal half of the decade. Similarly as to average annual residence consumption, the total gain in the decade was 353 kwhr. per annum, and of this total 144 kwhr., or 41%, was effected in the pre-New Deal half of the decade. The larger part in the New Deal half was due to the more general prevalence in that period of inducement rates.

Would it be unfair to note that during this same decade just ended the per cent of electric utility gross earnings paid out in taxes grew from 9.5% to 16%, a gain of over 68%, and that two-thirds of this added percentage burden occurred during the New Deal half of the decade?

I would not have you gather from the picture I have painted of steady vigorous progress by our industry that I am, ostrich-like, unmindful of our troubles. No one could be more painfully aware than I am that our Government, which in theory should be helping the business of its citizens, has picked out for vilification and attack our industry with its unique record (which I have cited) of service to the people of the country. Although it is known that five-eighths of the cost of furnishing electricity consists of fixed charges, we have seen our government actively inciting municipalities to compete by donating 45% of the investment cost. It is also well known that in the case of hydroelectric power about 92% of the total costs arises from fixed charges. Yet in the face of this we find our government, through the T.V.A. not only allocating to power but a small fraction of its investment, but in its published reports disregarding entirely interest and depreciation on even this inadequate investment—and then having the nerve to call this a "yardstick."

Competition we are thoroughly accustomed to; analysis shows that at least half of our gross earnings are derived from competitive business. This to my mind is one of the healthiest features of our business, since it keeps us on our toes. Competition envisages a fair fight for business, with the public always the gainer from being able to choose the most economical or convenient of various possible articles or services. This so-called Government competition, however, is really not competition at all but persecution, with the cards stacked against us by heavy subsidies furnished

by the taxpayers. The question is, what should be our attitude as salesmen in the face of these conditions?

Here again I believe we should take counsel of past experience. We have nothing to sell but service and, as has many times been observed before, the true interest of the public in our business is to get the best possible service at the lowest feasible cost. Our outstanding record in recent years in improving and extending and reducing the cost of this service should have produced a more friendly feeling toward our industry and a belief that we can, on the whole, do a better job for the people than their government can do for them in such an expert matter as electricity. It is natural that the constant government attack during the last five years should have tended to upset our peace of mind, but what have the people themselves, as shown by their votes in the secrecy of the voting-booth, indicated they think about the matter?

I have the record of 540 elections in communities in this country, having a total population of 22,638,000, which voted during the past five years on questions involving municipal ownership of electricity. Here are the results by years:

Years	% of Population in Communities Voting in favor of municipal ownership	Total Population of Communities Voting
1933	70.5	6,520,000
1934	63.3	6,155,000
1935	58.5	1,310,000
1936	27.4	5,735,000
1937	11.5	2,918,000
		22,638,000

While government ownership activity has been particularly noticeable in the T.V.A. territory and in the Pacific Northwest, the figures just cited would seem to indicate that country-wide our service is enjoying a growing appreciation by the public we serve—a result which should be most encouraging to our operating and sales forces.

You are to be congratulated, Mr. Chairman, in having the manufacturers so fully represented in both the attendance and the discussions at your conference. In making this observation, I want to disavow completely any trace of condescension. On account of the fact that in the past the utilities have collected from the public the major part of the money which goes to the manufacturers for equipment, we have been inclined perhaps to assume a somewhat lofty air with respect to the manufacturers, an attitude which is not justified by the basic facts. We should never forget that the quality and attractiveness of the service we have to sell depends upon the design and efficiency of the equipment necessary for the generation, distribution and consumption of that service. We crow gently over the fact that today a pound of coal can be made to produce five or six times as many kilowatt hours as a generation ago, without perhaps remembering that this is an achievement of the manufacturers rather than of ourselves. Even in our sales efforts, the results of which have been briefly mentioned, our accomplishments have been made possible largely by the ingenuity and skill of the manufacturers in the design and production of apparatus which can make the use of electricity economical and convenient to the average citizen. No workman can operate efficiently without the right tools and those tools the manufacturers have furnished in a big way. Broadly speaking, the electric industry is composed of two great branches: the manufacturers who contribute the machinery to produce and consume electricity, and the utilities who use that machinery to get electricity to the people. Both branches serve a common end; neither can achieve the greatest public benefit without the success and cooperation of the other.

Before dropping the subject of our great allies, I would say a word about the electrical dealers and contractors. There was a time some years ago, when the dealers could justly accuse the electric utility industry of doing to them the very thing that we now complain of the government doing to us; namely, using our economic power to compete unfairly with the dealer as a retailer, by ignoring or absorbing in our operating expenses charges which the dealer had to carry out of the operation of his retail business. These conditions of unhappy memory are now a thing of the past. The best statistical data available indicates that the utilities now sell but 15% of the electrical appliances in the country, and that 15% is accounted for somewhat by those communities which are too small to afford a satisfactory living for an electrical retailer. It is recognized by us all that the proper function of the utilities is to pioneer in the promotion of new appliances but to yield the field to the dealers as soon as any appliance gains such general acceptance as to make it satisfactory retail material. The decrease in the past year in the percentage of ranges and water heaters sold by the utilities is evidence of the good faith in which this transition is being handled by the utilities.

The editorial writers of the country have been having a lot of fun lately over what they deem to be the crimp that the new line of Diesel engines will put into the electric utilities. As one writer put it—"A T.V.A. in every cellar." These editorial chortles are based on the analogy believed to be seen in the effect which the low priced automobile has had on the great transportation industries, both urban and interstate. Apparent analogies should be carefully analyzed before basing sweeping general conclusions upon them. I decline to step forward in the role of a prophet, but I do want to make one observation about this situation, based upon long experience in both the transportation and electric industries. The basic reason for the tremendous development of individual transportation units was not economy but convenience. Official figures can be produced to show that the public pays eight to ten times as much for individual automobile transportation as it does for electricity in the home. It pays this huge bill in order to go where it wants when it wants to, as against the restrictions, unavoidable in public transportation, of following some fixed route (not always convenient) at some time fixed by someone else—often fairly infrequent.

In the matter of electricity service, this feature of flexibility and convenience is strongly on the side of central station service, any departure from it being at the risk of much lower convenience and reduced flexibility and dependability. All things are possible in this world and it may be that the American people, in providing for their power supply, will in the future forsake convenience, flexibility and dependability in exchange for fancied economy; but if they do, it will be a reversal of their past form and a reversal of the effect of those motivating human forces which caused individual transportation to injure the mass transportation industries.

The job of disseminating the blessings of electricity among the people is still far from complete. We are indeed happy as an industry in being able to feel that the results of our sales efforts mean so much in added comfort, safety and convenience and decreased drudgery to our millions of customers. To the carrying forward of this task of electrifying America, I bespeak your renewed efforts for the future, confident, on the basis of past performance, that those efforts will attain to ever higher goals.

". . . But the Most Important of These Is Men"

By Adam S. Bennion

Utah Power & Light Co., Salt Lake City, Utah

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

THE JOB that has been done by salesmen in the last twenty-five years is altogether outstanding. The work of the salesmen in the electrical field has been particularly noteworthy. The scope of their achievement is reflected in the results secured, whether we look at them by and large, or whether we look at them in some specific situation.

What a job has been done! Salesmen have played a very creative part in building a thirteen billion dollar industry which does a two billion dollar annual business. They have helped to provide outlets for the more than one hundred billion kilowatt-hours generated each year. The scope of the industry is reflected in the fact that it pays three hundred million dollars of taxes a year. Use has been extended until the average residential consumption for 1937 was 797 kilowatt-hours. The average residential rate has been reduced to 4.37¢. The average yearly residential cost is only $34.83, or $2.90 a month, or 9¢ a day—less than the price of a couple of Coca Colas. The outstanding job that has been done can only be fully appreciated if we try to imagine the comfort and convenience and efficiency which have been brought to twenty-seven million customers in this good land.

Let's look at the thing a little more concretely and a little more closely at hand. In my home state we have just gone through the heaviest storm in thirty years. A report of the trouble calls which cleared over our service desk reflects just how fully electric service has entered into our modern life. Listen to these typical calls:

Here's a house that's cold because the stoker won't run.

Here's sickness made the more dangerous because the electric pad cannot be used.

Here's a man who cannot shave because there is no current for the electric shaver.

Here's a farm where the cows can't be milked.

Here's a dairy where the milk can't be pasteurized.

Here's a shop with its ice cream melting.

DR. BENNION

Here's a meat market with its products spoiling.

Here's a bakery unable to mix its bread.

Here's a percolator that doesn't perc.

Here's a hair curler which leaves the hair in a semi-twisted state.

Here's an egg boiler that leaves the egg cold.

Here's a chicken brooder which jeopardizes a whole flock of spring fries.

And here's a new one—here's a farmer all excited because his hogs are running away from him because the electric fence no longer keeps them in the pasture.

And, of course—the common observation, "Our lights are off."

Certainly modern living is bound up with electrical service. That fact is a tribute to the salesmen in our organizations.

But if a great job has been done, a still greater job stands out there a challenge to all of us. The *E.E.I. Bulletin* for February, 1938, indicates the following percentage of saturation has already been reached:

Refrigerators	50%
Ranges	8%
Water Heaters	2%
Washers	49%
Vacuum Cleaners	50%
Ironers	6%

There's job enough reflected in these figures—to say nothing of the great new fields which are just being opened up. Think what air conditioning can come to mean.

Mindful of the wonderful achievement of the last quarter century, our interest this morning centers in an even more promising future. And in the face of that future I invite your attention to our text:

> "Men, money and materials are the sinews of business, but the most important of these is men."—*Rees.*

Men are the key that will unlock this future. Our strength will be their strength. And the interesting thing about men is that they can be developed—they grow. It is your opportunity, aye, your obligation to help them grow. You are the sales leaders of this great industry. You have no greater challenge than the building of men. I come to you with the conviction that America's great undeveloped resource is her man power.

I bring you some thoughts stimulated by a recent visit through the great agricultural expanses of the Middle West—a section where crops are made to grow. The farmers who have succeeded so eminently well tell me there is no magic to explain their results. They follow a fivefold recipe:

Seed
Soil
Moisture
Cultivation
Sun

Let me for a few minutes ask you to imagine yourselves *"Farmers On Your Sales Estate".*

I. SEED

The seed of salesmanship is character and in a final vote on character the I's still have it.

Integrity
Intelligence
Interest
Ingenuity

Your first challenge is to *select* men. Intelligence certainly can be measured in advance. No man who employs other men need any longer rely upon appearance or interviews. Tests are

available which, within thirty minutes, can become outstanding indexes of a man's possibilities.

Integrity can be ascertained by carefully looking into backgrounds and previous training and experience.

Interest and ingenuity are subtle, but they too can be ascertained.

You can hope to harvest only in terms of seed selected. Good men are good men first of all because of the native equipment with which they are endowed. Lacking that they present to you a job which will always, of necessity, be an uphill job.

II. SOIL

What good soil really does! Successful men always are anchored to the good earth. If my analogy does not take us too far afield, good soil involves

1. Company backgrounds—a full understanding of the pioneering work that has been built into our organizations, struggles through which we have gone, the organization which has resulted, the ideals and fundamental principles which underlie our procedures. All of these things are basic equipment for any employe.

2. Salesmen take on new strength when they comprehend our organization as a whole. In the selling field they should understand and appreciate the natural divisions:

Residential
Farm
Commercial
Industrial

They need, also, to appreciate the function of management and their relationship to it.

3. Salesmen need to be grounded in the matter of right relationship with manufacturers, jobbers, contractors, architects and plumbers. They need to be particularly fortified with right relationships with dealers that together we may work out sound sales policies, mark-ups, trade-ins, and servicing.

4. Salesmen need to be fundamentally sound in the matter of sales policies. They need to understand that merchandising is only one aspect of our over-all sales service. They should see comprehensively through the problems of sales planning, of sales technique, of sales costs and of market analyses.

5. Salesmen need to appreciate now as never before the importance of right relationships between our companies and the people whom we serve. In these days of crisis and attending alarm, every employe needs to be fortified in this field. Salesmen can do a particularly helpful job. They are out among the people and they have the genius to help people to understand. In my judgment the greatest challenge before American business today is the challenge to see to it that the American people understand clearly the economic hazards which now threaten our stability.

III. MOISTURE

What moisture is to farming, enthusiasm is to selling. I am told that one-fourth of our salesmen do three-fourths of our selling. What an abundance of dry farming evidently is being attempted. Can't you see this morning the "dried up" canvasser who complains that "the territory is run out." Our Salt Lake sales manager has just been good enough to put into my hands the records of two of our younger men, both of whom have been assigned to so-called "run out" territory. Both of them, because of new vision and heightened enthusiasm and a tremendous amount of follow-up, have brought in record sales from territories already pronounced impossible.

After all, selling is all largely a matter of contagion. We have an odd way in this country of hanging out flags to warn people against contagion. The flag says, in effect, "Keep away from me or you'll *come down with something.*" The successful salesman hangs out a flag, too, but it reads, "Listen to me and *come up with something.*"

IV. CULTIVATION

It is wonderful what cultivation can do, even on relatively poorer soil. In the sales field cultivation consists of

1. *Individual study.*

What a wealth of material is available through books, magazines, and correspondence courses.

Let's look at books for just a minute. What newness of life can come from a week spent with Elmer Wheeler's "Tested Sentences that Sell," or from Braasch's "Nine Steps in Making a Sale," or from Ivey's "Applied Salesmanship," or from Strong's "Psychology of Selling." These books are but typical. Every salesman needs the reinforcement of continuous reading of new, stimulating volumes.

2. *Specific problems.*

It is interesting, again, to address ourselves to the problem that lies in really making a sale. I try to watch my own processes as salesmen approach me. I discover that either consciously or unconsciously I face every salesman who sits across the table from me with four questions:

Who are you?
What have you?
Why should I buy?
How much will it cost?

Under the query "Why should I buy?" I come more and more to believe that the appeal always centers in one of the four P's:

Protection
Profit
Pleasure
Pride.

Problems like these, fully analyzed, cultivate real strength.

3. *Group Meetings. Exchanged Ideas.*

Informal round table discussions have infinite value. Every man in a group takes on the strength of every other man, and together they develop a new strength that seems to belong to none of them. I have watched our own Salt Lake sales-manager, now through a period of ten years, develop tremendous strength in his men by making each one of them joint heirs of the wealth of every other one.

4. *Conferences* with outstanding men in the sales field, but engaged in work in other industries, are always stimulating. Every successful salesman has a genius all his own. Contacts with such men are always stimulating as well as helpful.

5. *Conventions*

I grow in the conviction that salesmen, particularly, need the inspiration of at least one good convention a year. Men in creative jobs need to have their batteries recharged.

Whatever the limitations may be of the seed selected, or of the soil available, or the amount of moisture in any given system, cultivation is always a matter of good sense.

V. SUN

Leaders need to be reminded that the sun provides both light and warmth. We need the light of direction and of correction. There is no substitute for them. These are the very essence of sales leadership. But we need, also, the warmth of reward and of encouragement. The New Deal has not outmoded the genius of a friendly hand on the shoulder expressing appreciation for a good job well done. I have seen so many men transformed through a little intelligent kindliness that I am sure you builders of men may well check to see that the clouds of "busyness" do not prevent the rays of confidence and conviction from shining through.

You will note that nothing has here been said about the dangers which attach to farming. I shall leave to your imagination the consideration of

The frosts of disappointment.
The blight of an unhappy home life.
The weeds of vicious habits.

No farmer but knows what havoc any one of these three can wreak.

You are leaders. You have many responsibilities. You are busy with matters of quota, with your plans, with your sales campaigns, with your reports, etc., etc., etc. But none of your responsibilities can be greater than the building of men. May I remind you

"Men, money, and materials are the sinews of business, but the most important of these is men."

Success to you men among men.

Organized Training in the Utility Sales Department

By C. A. Eastman

Ebasco Services, Inc., New York City

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

UTILITIES spend nearly $6 out of every $10 of Gross Sales Promotional Expense Dollars for Sales man-power.

In view of this large expenditure for man-power, Organized Sales Training to secure maximum satisfactory Sales Results for every dollar spent can hardly be emphasized too strongly.

Recognition of the growing need in business for assuring efficient operation is well set forth by E. B. Wilson, in a recent book entitled, "Getting Things Done in Business," as follows:

"Personnel is costing more and more. Management is confronted with the problem of making it worth what it costs. That demands more intelligent leadership and better understanding of how to get men to do things. . . ."

That training ranks high as the best means of securing such efficient operation is further developed by J. H. Greene, Director, Retail Research Bureau, University of Pittsburgh, in his book on "Organized Training in Business," wherein it is stated:

"We are now in a new era. There is every indication that reliance must be placed on training if we are to meet the problems that confront us."

Capable, efficient, loyal man-power is an organization's most priceless asset. It is the aim of Organized Sales Training to make this utility asset of maximum value in the Sales Department.

Before continuing, it might be well to answer the question

What is Meant by Organized Training?—Organized Training has to do with the training of man-power to the end that

—Work will be done more efficiently and consequently more easily,
and
—Better results may be secured from such work.

An Organized Training Program in the Utility Sales Department is one based on pre-determined training needs which provide a coordinated plan for giving systematic, continuous training to

MR. EASTMAN

every class of Sales employe; as well as limited provision for training non-sales employes and dealer employes. The Sales Training in such an organized program is adapted to local conditions and to the Selling of Utility Service. Now to review for a moment the

History of Utility Training—Sales Training is by no means a new subject. It has formed the basis for countless books, articles, courses, and the like. In some form, either systematically or otherwise, it is practiced by every successful business.

Therefore, it may be asked, "Why another treatise on Sales Training?" In answer it may be said that we are advocating here not "Sales Training" but rather an "Organized Training Program," this for the reason that *Selling* is itself relatively new as a recognized major function and opportunity in the utility business. Also, the well-known and thoroughly proven principles of Sales Training have not generally been specifically and consciously applied on an organized basis to the peculiar needs and complex problems of Utility Selling.

The history of Utility Training shows that much emphasis has been placed, in the past, on over-all employe training in the endeavor to make the public "like the Company." That was generally referred to as "Public Contact" training.

Generally such Training as has been done in Sales Departments can be best described as *"Piecemeal" Training.* Most utilities have carried on this kind of Training in one form or another. Perhaps it consisted of special courses on "Salesmanship," prepared by some outside organization or manufacturer, courses on "How to Sell an Electric Range" and the like—usually some sort of an appliance course based on Product Selling not Service Selling. Other companies have built up their own courses. There is no standard practice.

Everyone of the courses mentioned, and others, are excellent and have much individual merit, but constitute only "piecemeal training" Programs.

A survey of training procedures, materials, and objectives of a number of utilities indicates that many have not as yet completely organized their Sales Training. As a result, their Sales Personnel are not in all cases adequately prepared to effectively teach customers the Advantages, Value, and Economy inherent in liberal Use of Utility Service.

With the above in mind this paper has been prepared to consolidate the most up-to-date utility thinking on the subject of Organized Training in the Utility Sales Department. It also briefly points out

—The need for Organized Training
—How to improve the Selling of Utility Service
—How an Organized Training Program may be developed and carried out,
and
—The benefits that accrue from Organized Training.

It is essential to point out at this time:

Why Organized Training is Important to You—Now!—Selling has become one of the most important factors in the

success of every modern business enterprise.

Human ingenuity and industry have made available useful and desirable products and services in great variety and number. Among such commodities Utility Services rank high from a value and quality viewpoint.

Today those businesses that can *sell* most effectively are those most likely to succeed. Selling technique may, and often does, exert a surprising influence in competition with quality, merit, value —even usefulness. Mr. Emerson's theory that the public will beat a path to the door of the builder of the best mouse trap, no longer holds. The world will not continue to beat a path to *your* door unless you prepare to outsell the constant appeal being made by *other* businesses for the consumer's dollar.

Those other businesses include not only directly competing products and services. They include the corner 5 and 10, the department store, the furniture store, the furrier, the liquor store, the automobile salesman, and the movies.

The average American family only has so many dollars. That family wants more things than their dollars will buy, and if someone gets those dollars before you do, by creating a more impelling desire for his product, *your* service is going to remain unsold and unused.

By your position in the *competitive* market, your obligation to put forth adequate promotional effort is made more imperative. This is brought about by the economic facts governing the utility business. Perhaps one of the most important of these is the amount of capital necessary to provide adequate plant and distribution systems. For example, the Electric Utility Industry requires approximately $6 to $7 capital investment per dollar of revenue as compared for instance to 67 cents in the Automobile Industry, and the capital requirements of the Utility Industry are increasing.

To provide the excellent service to which the public has become accustomed, you must employ an amount of capital greatly in excess of that required by most other businesses.

Another difference arises out of the fact that, as a public utility, you are not free to determine the rates at which services may be offered and, therefore, in seeking business you cannot include Sales Promotional expense of securing business, comparable to that of other industries which are subject only to the law of supply and demand.

Because of these and other factors, you are limited in the investment you can make in promotional efforts when compared with those being made by other types of business that are fighting for part of the consumer dollar.

No one can deny the value to the public of any effort you may make to promote the use of your services because the *services you sell* are in the interest of Better Living and More Profits for your customers. In the Residential and Farm group they make for comfort, convenience, economy, safety, and health. To Commercial and Industrial and in many cases Farm customers, they are Profit Tools.

At this point, it might be well to outline briefly

What Utilities Have to Sell—The basic Sales job of a utility is to sell its own services at compensatory rates and to secure the liberal use of those services by its customers for their own comfort, convenience, health, pleasure and profit. The problem of merchandising equipment must always be incidental to this ultimate objective.

There is one fundamental that should be recognized in the selling of Utility Service, namely, *Utilities Sell Energy*. Utility customers and loads are constantly shifting, never static. Mortality of *Use* is far greater than generally suspected. Industries and stores come and go, Residential appliances are bought and shelved, a tremendous percentage of all customer service-using equipment is used very infrequently or for only a short time after initial purchase and installation.

For those reasons, therefore, Utility Sales Programs should be designed to sell all customers the Value and Cheapness of all *utility services constantly, skilfully, effectively* and *permanently* so that they will make use of their present energy-using devices continually, liberally and ungrudgingly.

Since it is the function of the utility to sell its service, the Sales problem, therefore, is to secure the maximum beneficial use of those services by its customers. This involves far more than getting appliances and equipment into the customers' homes or places of business. To best achieve this function, the theme suggested by the Ebasco Sales Department to its client companies has been, *"Sell Use and the People Will Buy Equipment."* It is evident, therefore, that

High Sales Efficiency is Essential—Utility Selling should be based on a careful analysis of the size and extent of present and future markets in order that a maximum of new compensatory business may be secured at minimum additional capital investment and operating expense. Further, such selling must logically place maximum Sales emphasis on those types of service which bring maximum benefit to the customer in terms of Better Living or More Profits.

In the carrying on of Utility Selling there are certain basically unfavorable factors, two of which are

—The high capital investment per dollar of Gross Revenue, and
—The limited amounts that can be spent for Sales Promotion Expense.

The job of *selling* utility service requires a *maximum* of personnel efficiency and must produce above average results per dollar of selling expense, if it is to be effective within the limited means available.

It requires, therefore, the best there is in sales organization to do an adequate selling job, and the importance of Utility Selling is becoming more and more apparent.

Now, when we look at the broad problem of Selling, we find that the common denominator of Sales Achievement is *MEN*. Utilities have come to recognize the need for more and more of that Man-power and, as stated before, are spending nearly $6 out of every $10 of their Sales Promotion Expense dollars for it. With this in mind there exists:

Executive Responsibility for Organized Training—While it is essential that the General Sales Manager of every utility carry on the active work of organizing and executing Organized Sales Training in the Sales Department, it cannot be said that such responsibility stops at this point. It is just as necessary that other Utility Executives have a complete understanding of the aims, objectives, policies and results that may be obtained from carrying out such a training program and that it have their full and unqualified endorsement. Only with such endorsement, together with ample provision for developing and carrying out the training program will successful achievement of the planned objectives of the program be achieved.

The ways and means of achieving Organized Training are quite clear, if they be recognized and something done about them. The basic steps to take in developing and carrying out an Organized Training Program in the Utility

Sales Department are set forth in the following section of this paper.

DEVELOPING AND CONDUCTING AN ORGANIZED TRAINING PROGRAM

Preparation of a definite plan for an Organized Training Program, before beginning the training work, is essential. When a final plan has been decided upon it should then be reduced to writing.

The importance of advance planning for an Organized Training Program is well indicated in an excerpt from a booklet on training issued by the Metropolitan Life Insurance Company Policyholders Service Bureau, as follows:

> "Careful planning before the training program is imperative. Putting the plan on paper as the first step in the training program 'crystallizes and unifies the plan and makes it more tangible to all concerned' . . . many programs fail or are only partially successful because of inadequate planning."

In setting up a plan for an organized training program it is but natural that various questions arise as to "What Are The Objectives?", "Who Should be Trained?", "How Shall Training Needs be Determined?", "Who Shall do the Training?", "What Training Methods Shall be Used?", "What Sales Training Materials are Available?", "How Can Results be Checked?", and "Will It Pay?".

Within the time available for this paper it is not possible to present a complete discussion in answer to the many questions that arise. It is feasible only to emphasize the necessity for an organized training program; to outline briefly the major items that should be considered in developing and conducting an organized training program, and to mention the benefits that will result. With these factors in mind the following is submitted.

General Objectives of the Training Program—The overall objective of an organized training program in the Utility Sales Department, is to improve the selling of utility service. Fundamental in the accomplishment of this objective is that each sales manager, supervisor, salesman, and other employe of the department secure a clear understanding of:

—The company's policies which affect individual customer's relationship with the company
—The responsibilities that go along with each man's own job and the relationship of his job to those of his associates, both in the company and with sales allies
—The fundamental concept of utility selling, namely, that utilities sell energy and that utility merchandising is incidental to this objective
—The benefits that utility service provides for every type of customer
—The most effective manner of approaching prospects and customers and meriting their confidence
—The modern technique of successful salesmanship applied to the sale of utility service
—The fact that salesmanship, in its essence, consists of overcoming obstacles when and as they are encountered—not retreating before them; and training is necessary to enable salespeople to get consistent results successfully in the face of modern competition of all kinds
—The need to keep present users sold—to prevent LOAD MORTALITY
—Why people don't use more utility service
—Where customers can buy additional equipment or obtain service on existing equipment
—The Company's part in an Organized Utility-Dealer Sales Development Program
—The dealer's part in an Organized Utility-Dealer Sales Development Program
—The possibilities for increased use of utility service by present customers
—The incentive to improve the selling of utility service, and finally
—The realization that the sales training job is never done. Successful selling grows upon experience and success and only as the latter are observed, analyzed and capitalized in sales training material which will further continuous growth and progress, does an efficient sales organization develop.

This logically raises the question then *Who Should be Trained?*—While the items just mentioned represent a partial list of general training objectives, it will be noted that more specific instruction must be provided in accordance with the rank or duties of the group of employes to whom it is directed. For example, the Dealer Sales Development representatives need all of the instructions encompassed by the aims described above and in addition must be taught the technique of being most helpful in training dealers on how to sell more effectively. Similarly, other groups require job training for their specific duties. Such training can only be set up after careful analytical job analyses have been prepared for each specific individual in the Sales Department.

Managers will need training of one type. Supervisors will require a somewhat different type of training. The fundamental similarity of all such training, however, will be that it is designed to fit those being trained to better perform their primary functions and to better teach their subordinates in turn to more efficiently perform their duties.

With the fundamental premise in mind that training is an inseparable part of, as well as a direct obligation of management, it is apparent that every employe of the Sales Department must be trained. So too, must limited provision be made for training other employes and sales allies where deemed necessary.

The need for training applies to both new and experienced men. Also, training is necessary for the supervisory staff as well as the salesmen. In certain cases it might also be desirable to consider at least a certain amount of training for the heads of other departments, perhaps through periodic participation in sales meetings.

While it is evident that some personnel will require less training than others, nevertheless all must be provided for in the Program.

The momentum of many training programs, as well as enthusiastic endorsement of same, has been found to be most satisfactory where both Chief and Sales Executives have taken part in the program. Having determined who should be trained, the next step would logically be

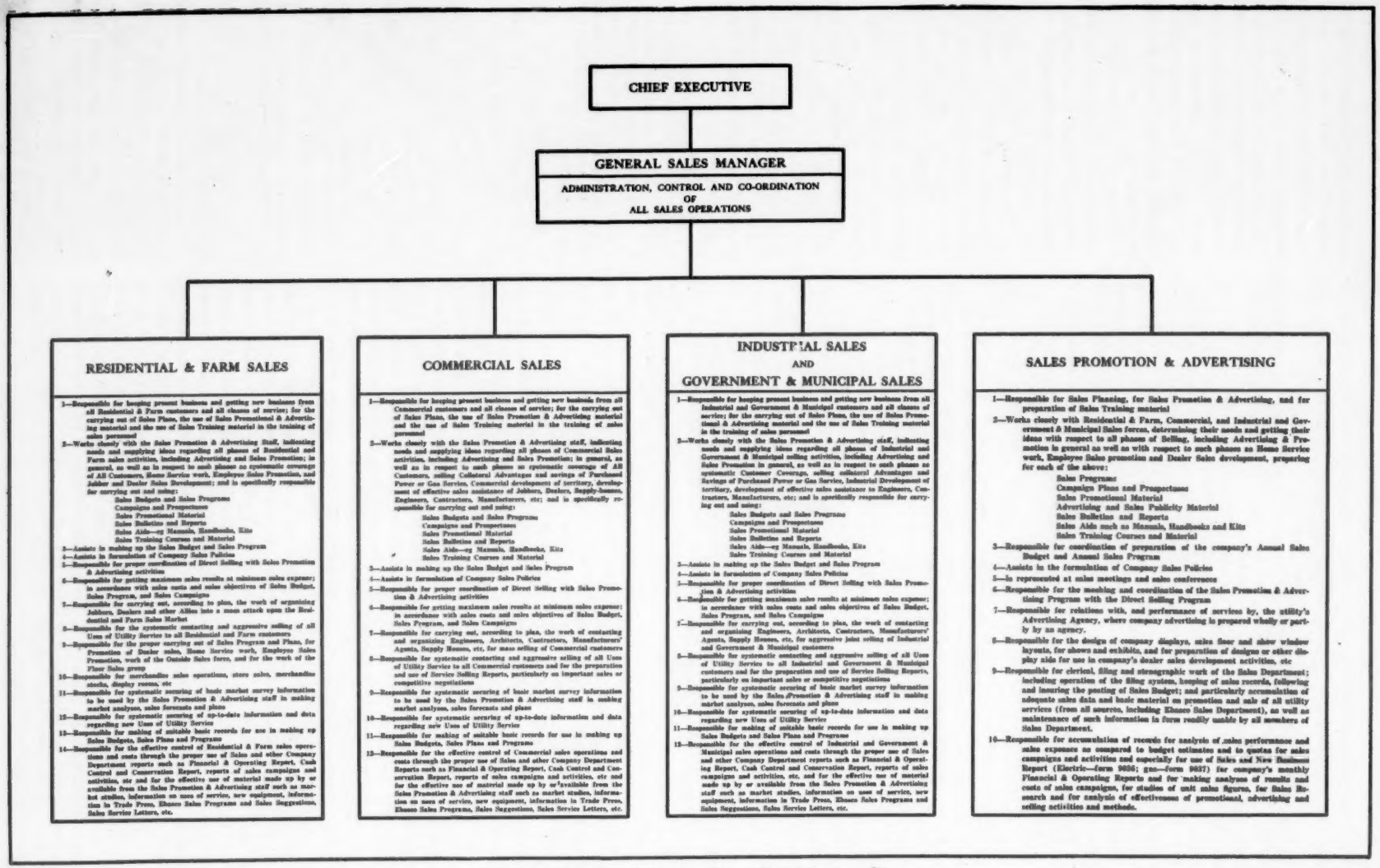
How Shall Specific Training Needs Be Determined?—As pointed out by W. W. Charters, Director, Bureau of Educational Research, Ohio State University, in the "American Management Association's Handbook of Business Administration,"

> "The fundamental principle of salesmen training is that it should be based upon an analysis of the particular type of job that is to be performed. Every sales course is custommade; it is not ready-made. Every organization requires a specific course that fits it and will not, without alteration, fit any other organization."

With the aforegoing in mind it is generally agreed that the first step in determining training needs is to develop a complete job analysis, which primarily includes, first a functional *duty analysis,* and, secondly, a so-called *difficulty analysis,* so that the best methods of handling difficulties may be determined and subsequently taught to all individuals who are apt to meet with such obstacles.

A brief summation of the various steps that must be considered in determining the training needs for a Utility Sales Department might include:

—Analysis of present sales operations, including both duty analyses and difficulty analyses for each person
—Formulation of over-all objectives of Training Program
—Coordination of Training Program with all phases of the Sales Program
—Classification of personnel to be trained, together with the formulation of specific training aims for each group. These groups might conceivably include:
Managers
Residential Supervisors and Salesmen
Commercial Supervisors and Salesmen
Industrial and Government & Municipal


CHIEF EXECUTIVE
GENERAL SALES MANAGER
ADMINISTRATION, CONTROL AND CO-ORDINATION OF ALL SALES OPERATIONS
RESIDENTIAL & FARM SALES
1—Responsible for keeping present business and getting new business from all Residential & Farm customers and all classes of service; for the carrying out of Sales Plans, the use of Sales Promotional & Advertising material and the use of Sales Training material in the training of sales personnel
2—Works closely with the Sales Promotion & Advertising Staff, indicating needs and supplying ideas regarding all phases of Residential and Farm sales activities, including Advertising and Sales Promotion; in general, as well as in respect to such phases as systematic coverage of All Customers, Home Service work, Employee Sales Promotion, and Jobber and Dealer Sales Development; and is specifically responsible for carrying out and using:
Sales Budgets and Sales Programs
Campaigns and Prospectuses
Sales Promotional Material
Sales Bulletins and Reports
Sales Aids—eg Manuals, Handbooks, Kits
Sales Training Courses and Material
3—Assists in making up the Sales Budget and Sales Program
4—Assists in formulation of Company Sales Policies
5—Responsible for proper coordination of Direct Selling with Sales Promotion & Advertising activities
6—Responsible for getting maximum sales results at minimum sales expense; in accordance with sales costs and sales objectives of Sales Budget, Sales Program, and Sales Campaigns
7—Responsible for carrying out, according to plan, the work of organizing Jobbers, Dealers and other Allies into a mass attack upon the Residential and Farm Sales Market
8—Responsible for the systematic contacting and aggressive selling of all Uses of Utility Service to all Residential and Farm customers
9—Responsible for the proper carrying out of Sales Program and Plans, for Promotion of Dealer sales, Home Service work, Employee Sales Promotion, work of the Outside Sales force, and for the work of the Floor Sales group
10—Responsible for merchandise sales operations, store sales, merchandise stocks, display rooms, etc
11—Responsible for systematic securing of basic market survey information to be used by the Sales Promotion & Advertising staff in making market analyses, sales forecasts and plans
12—Responsible for systematic securing of up-to-date information and data regarding new Uses of Utility Service
13—Responsible for making of suitable basic records for use in making up Sales Budgets, Sales Plans and Programs
14—Responsible for the effective control of Residential & Farm sales operations and costs through the proper use of Sales and other Company Department reports such as Financial & Operating Report, Cash Control and Conservation Report, reports of sales campaigns and activities, etc and for the effective use of material made up by or available from the Sales Promotion & Advertising staff such as market studies, information on uses of service, new equipment, information in Trade Press, Ebasco Sales Programs and Sales Suggestions, Sales Service Letters, etc.
COMMERCIAL SALES
1—Responsible for keeping present business and getting new business from all Commercial customers and all classes of service; for the carrying out of Sales Plans, the use of Sales Promotion & Advertising material and the use of Sales Training material in the training of sales personnel
2—Works closely with the Sales Promotion & Advertising staff, indicating needs and supplying ideas regarding all phases of Commercial Sales activities, including Advertising and Sales Promotion; in general, as well as in respect to such phases as systematic coverage of All Customers, selling Collateral Advantages and savings of Purchased Power or Gas Service, Commercial development of territory, development of effective sales assistance of Jobbers, Dealers, Supply-houses, Engineers, Contractors, Manufacturers, etc; and is specifically responsible for carrying out and using:
Sales Budgets and Sales Programs
Campaigns and Prospectuses
Sales Promotional Material
Sales Bulletins and Reports
Sales Aids—eg Manuals, Handbooks, Kits
Sales Training Courses and Material
3—Assists in making up the Sales Budget and Sales Program
4—Assists in formulation of Company Sales Policies
5—Responsible for proper coordination of Direct Selling with Sales Promotion & Advertising activities
6—Responsible for getting maximum sales results at minimum sales expense; in accordance with sales costs and sales objectives of Sales Budget, Sales Program, and Sales Campaigns
7—Responsible for carrying out, according to plan, the work of contacting and organizing Engineers, Architects, Contractors, Manufacturers' Agents, Supply Houses, etc, for mass selling of Commercial customers
8—Responsible for systematic contacting and aggressive selling of all Uses of Utility Service to all Commercial customers and for the preparation and use of Service Selling Reports, particularly on important sales or competitive negotiations
9—Responsible for systematic securing of basic market survey information to be used by the Sales Promotion & Advertising staff in making market analyses, sales forecasts and plans
10—Responsible for systematic securing of up-to-date information and data regarding new Uses of Utility Service
11—Responsible for making of suitable basic records for use in making up Sales Budgets, Sales Plans and Programs
12—Responsible for the effective control of Commercial sales operations and costs through the proper use of Sales and other Company Department Reports such as Financial & Operating Report, Cash Control and Conservation Report, reports of sales campaigns and activities, etc and for the effective use of material made up by or available from the Sales Promotion & Advertising staff such as market studies, information on uses of service, new equipment, information in Trade Press, Ebasco Sales Programs, Sales Suggestions, Sales Service Letters, etc.
INDUSTRIAL SALES AND GOVERNMENT & MUNICIPAL SALES
1—Responsible for keeping present business and getting new business from all Industrial and Government & Municipal customers and all classes of service; for the carrying out of Sales Plans, the use of Sales Promotional & Advertising material and the use of Sales Training material in the training of sales personnel
2—Works closely with the Sales Promotion & Advertising staff, indicating needs and supplying ideas regarding all phases of Industrial and Government & Municipal selling activities, including Advertising and Sales Promotion in general, as well as in respect to such phases as systematic Customer Coverage, selling collateral Advantages and Savings of Purchased Power or Gas Service, Industrial Development of territory, development of effective sales assistance to Engineers, Contractors, Manufacturers, etc; and is specifically responsible for carrying out and using:
Sales Budgets and Sales Programs
Campaigns and Prospectuses
Sales Promotional Material
Sales Bulletins and Reports
Sales Aids—eg Manuals, Handbooks, Kits
Sales Training Courses and Material
3—Assists in making up the Sales Budget and Sales Program
4—Assists in formulation of Company Sales Policies
5—Responsible for proper coordination of Direct Selling with Sales Promotion & Advertising activities
6—Responsible for getting maximum sales results at minimum sales expense; in accordance with sales costs and sales objectives of Sales Budget, Sales Program, and Sales Campaigns
7—Responsible for carrying out, according to plan, the work of contacting and organizing Engineers, Architects, Contractors, Manufacturers' Agents, Supply Houses, etc, for aggressive joint selling of Industrial and Government & Municipal customers
8—Responsible for systematic contacting and aggressive selling of all Uses of Utility Service to all Industrial and Government & Municipal customers and for the preparation and use of Service Selling Reports, particularly on important sales or competitive negotiations
9—Responsible for systematic securing of basic market survey information to be used by the Sales Promotion & Advertising staff in making market analyses, sales forecasts and plans
10—Responsible for systematic securing of up-to-date information and data regarding new Uses of Utility Service
11—Responsible for making of suitable basic records for use in making up Sales Budgets and Sales Plans and Programs
12—Responsible for the effective control of Industrial and Government & Municipal sales operations and costs through the proper use of Sales and other Company Department reports such as Financial & Operating Report, Cash Control and Conservation Report, reports of sales campaigns and activities, etc. and for the effective use of material made up by or available from the Sales Promotion & Advertising staff such as market studies, information on uses of service, new equipment, information in Trade Press, Ebasco Sales Programs and Sales Suggestions, Sales Service Letters, etc.
SALES PROMOTION & ADVERTISING
1—Responsible for Sales Planning, for Sales Promotion & Advertising, and for preparation of Sales Training material
2—Works closely with Residential & Farm, Commercial, and Industrial and Government & Municipal Sales forces, determining their needs and getting their ideas with respect to all phases of Selling, including Advertising & Promotion in general as well as with respect to such phases as Home Service work, Employee Sales promotion and Dealer Sales development, preparing for each of the above:
Sales Programs
Campaign Plans and Prospectuses
Sales Promotional Material
Advertising and Sales Publicity Material
Sales Bulletins and Reports
Sales Aids such as Manuals, Handbooks and Kits
Sales Training Courses and Material
3—Responsible for coordination of preparation of the company's Annual Sales Budget and Annual Sales Program
4—Assists in the formulation of Company Sales Policies
5—Is represented at sales meetings and sales conferences
6—Responsible for the meshing and coordination of the Sales Promotion & Advertising Program with the Direct Selling Program
7—Responsible for relations with, and performance of services by, the utility's Advertising Agency, where company advertising is prepared wholly or partly by an agency.
8—Responsible for the design of company displays, sales floor and show window layouts, for shows and exhibits, and for preparation of designs or other display aids for use in company's dealer sales development activities, etc
9—Responsible for clerical, filing and stenographic work of the Sales Department; including operation of the filing system, keeping of sales records, following and insuring the posting of Sales Budget; and particularly accumulation of adequate sales data and basic material on promotion and sale of all utility services (from all sources, including Ebasco Sales Department), as well as maintenance of such information in form readily usable by all members of Sales Department.
10—Responsible for accumulation of records for analysis of sales performance and sales expenses as compared to budget estimates and to quotas for sales campaigns and activities and especially for use of Sales and New Business Report (Electric—form 9036; gas—form 9037) for company's monthly Financial & Operating Reports and for making analyses of results and costs of sales campaigns, for studies of unit sales figures, for Sales Research and for analysis of effectiveness of promotional, advertising and selling activities and methods.

A Model Functional Utility Sales Organization Chart

Supervisors and Salesmen
Home Service Girls
Dealer Coordinators
Others for whom training will be included in the Program.

A very helpful guide in the necessary steps for determining training needs will be found in a book written by Mr. J. H. Greene, Director, Retail Research Bureau, University of Pittsburgh, entitled "Organized Training in Business," in the chapter headed "Determining Training Needs."

Having determined training needs, the next question might be

What is to be Taught?—Since the entire training program is aimed at improving the sale of Utility Services, it might be thought that a general Sales Training course could be prepared by some qualified agency, and sold to all utilities for general application. However, when the specific objectives of what a Utility Sales Training Program must accomplish are examined, it will be noted that many of them do not apply generally. Obviously, a worthwhile training program will deal not in generalities but will provide for the needs of the company for which it is designed. Some of the parts which compose the program may be found to be already prepared and available either within the company or by some outside agency.

Utility training deals with the acquirement of skill, complete application of knowledge, and above all, deals with human beings, and endeavors to change their habits, to keep pace with the changes in this modern era.

An Organized Training Program, in a "nut shell," must be planned on the job; and developed on the job to meet the specific needs of the particular company. Unless training is so designed to meet a company's individual needs in a practical way, which a single service course can never do, the full value of Organized Training can never be achieved.

Sources of Sales Training Material—Companies interested in Organized Training can obtain material from many sources. Like most valuable things, the best sales training material and sales training courses are secured the hard way—by being made up locally. Much of the raw material can, of course, be secured from outside sources, and from the multitude of sales training courses of all kinds which are available.

Successful utility experience indicates that sales training material is *secured from many* sources such as manufacturers, trade associations, other utilities, correspondence schools, local universities, and, of particular significance, courses prepared by companies' sales staffs. By and large, utilities are finding it necessary to collect a large quantity of broad source material and develop it into a concentrated coordinated sales training program, *largely of local preparation,* adapted to local conditions, and to the peculiar problems of "Selling Utility Service."

Among the important sources of material for the training program are sources within the company, including the history of the company, records of customers, policy statements by executives, existing sales training or public contact courses, sales staff experiences, selling tools, visualizers, films, and the like.

Sources of training material outside the company might include trade and service organizations; sales training courses used by other utilities and manufacturers and insurance companies; universities and colleges; text books and publications dealing with selling in all fields; manuals, handbooks, selected advertising and sales promotional material of manufacturers and publications of business organizations; libraries; and a host of other valuable sources.

Having decided on who is to be trained; how specific training needs shall be determined; and the subject matter or material for the course it is timely to consider:

What Training Methods Should be Used?—There are many different methods of training which are of value in an Organized Utility Training Program. Usually it will be necessary to utilize a judicious combination of the training methods mentioned hereafter. Methods of training that might be utilized include:

—*Group Conference Method*—which is a development of the Sales Meeting and generally considered to be most effective. This method is based on the idea of getting the participants to take an active part in the proceedings and to clarify their thoughts and develop self-reliance. It calls for a definite procedure and is largely dependent for its success on the ability of the Group Conference Leader. There is ample literature on this method which should be investigated to explore its possibilities.
—*Sales Meetings — Annually, Monthly, Weekly, or Daily*—This method generally consists of a presentation by the Group Leader of the activities for the period, as distinguished from the Conference Method.

Other methods, which time limitations do not permit eliminate detailed discussion of, includes:
—Personal conferences between trainer (supervisor) and learner
—Training on the job (demonstration, trial, correction, practice)
—Training outside the company available through service organizations, educational institutions, vocational training (Federal or State projects)
—Manufacturers and distributors meetings held usually to announce new lines and activities
—Inspection trips, and
—Systematic provision for keeping abreast of modern development through Sales Service Letters, Sales Reports, and Sales Suggestions from Utility and Business service Organizations, or general office information services (conducted by the Sales Promotion and Advertising Division of the Sales Department), open forum discussions, and others.

The next question that must be considered is

Who Will do the Training?—Unless there is definite responsibility for the development and carrying out of an Organized Sales Training Program assigned to one competent individual in the general office Sales Promotion and Advertising Department, designated hereafter for reference purposes as the Training Coordinator, the program is not apt to be well organized. Rather such program would probably be of the "Piecemeal" type of activity. Such "Piecemeal" training is usually given only as courses, that seem to fit the situation, become available.

Some companies will not require that a man spend full time on training research work. Despite this, it must be handled by someone who can be made entirely responsible for the Organized Training Program. The assignment of responsibility for an Organized Sales Training Program should be given to an individual in the general office Sales Promotion and Advertising Department. Such an individual's duties must include study and collection of both local and other material and the assembly of such material into written sales training courses for local use.

The Training Coordinator's duties require that he be a trainer of trainers. Further, he must be able to sell the program that he has been responsible for developing and administering to the top executives, to his own sales executives, to the trainers, such as the supervisors, and if needs be, at times, to the others is the Sales Department. He must do the research necessary to determine the training needs of the company and or-

ganize a complete training program based on the determined needs.

The Training Coordinator must look at the problems of the company and the sales staff from a *practical business* viewpoint rather than from an academic viewpoint. He must have suitable personality traits and the ability to work effectively with others.

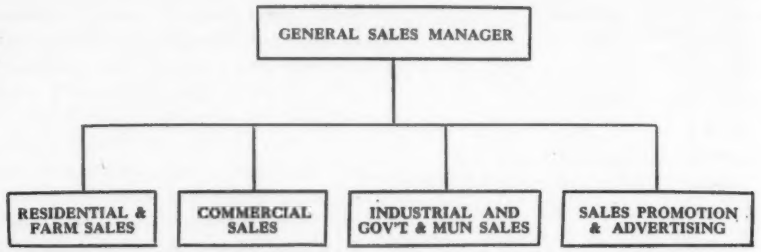
An essential part of the research performed by the Training Coordinator to keep the training program closely keyed to the company's needs, will consist of observation by him of the various training sessions and consultation with the trainers to improve their training technique. Here again, the Training Coordinator performs much, which in a less carefully organized training program, is often done haphazardly because "Everybody's business is nobody's business."

In most utilities, the training staff will consist of the supervisors within the various divisons, who will serve as trainers for the people normally under their supervision. This plan may offer some difficulties where supervisors have been chosen without respect to their ability to train. However, the institution of a comprehensive organized training program with suitable training procedures and methods furnished by the Training Coordinator, will simplify the training and at the same time make it far more effective.

I have just mentioned that the Sales Training Coordinator should be an individual in the Sales Promotion and Advertising Division of the Sales Department.

In view of the fact that practically all utility operations—including sales and delivery of service to or contact with customers, as well as the filing of correspondence, information and data on such sales activities—are best divided according to fundamental customer classifications, namely, Residential, Commercial, Industrial, Farm, and Government & Municipal; such classifications, therefore, provide the most logical basic approach for the analysis of utility marketing problems, the formulation of written sales programs, and the organization and functions of a Utility Sales Department.

The basic functions of a Utility Sales Department are to retain present business and to develop and secure all possible new business on compensatory rates and at minimum expense for all classes of service. To accomplish these functions, therefore, a fundamentally correct utility sales organization should comprise the divisions charted above.



For reference, there is reproduced on page 116 a model functional utility sales organization chart, which is in accordance with, but expands somewhat upon, the fundamental organization diagram and the broad functions of a Utility Sales Department, as set forth above.

At this point it seems desirable to discuss the question

How Can Results be Checked?—Any training program is incomplete unless it provides a systematic means of checking results. A program must be kept up-to-date and weak spots eliminated as fast as they are found. Provisions must also be made for checking the men who are being trained, and determining if they are using and benefitting from the training program. No training program will run itself. With this in mind appropriate mechanics must be provided to check the training program for effectiveness. Among the checking methods that might be utilized are:

—Sales Records—Since most utility salespeople are assigned to definite territories and since sales managements require daily written reports of the activities of each, a partial check of the results of training can be obtained from an analysis of such reports. Obviously these reports cannot reflect all benefits derived from training but they do furnish frequently the dollar and cent value of results. They should be supplemented by
—Observation by supervisor of employe skill in performing his duties on the job
—Use of rating sheets
—Conference check-ups, and examinations, both oral and written.

And now having developed both the plan and methods to be used in an Organized Training Program, it might be well to set forth briefly in "check list" fashion

The Basic Requisites of a Successful Organized Training Program—The basic requisites upon which a successful organized training program for the Sales Department rests, include:

—Qualified Personnel—Selected to fit their functions
—Training Program built to fit local needs
—Executive endorsement of Training Program
—Sales Training responsibility assigned to competent individual in Sales Department
—Qualified and well trained trainers
—Thorough and systematic supervision
—A methodic schedule of training activities
—Adequate material interestingly presented
—Continuity through good times and bad
—Periodic check-up on effectiveness of Program.

Thus far the discussion in this paper has been developed on the premise that

—The basic fundamental that should be recognized in the selling of utility service is "Utilities Sell Energy"
—There exists a need for "Organized Training To Improve the Selling Of Utility Service"
—Utilities have a large capital investment per dollar of gross revenue as exemplified in the electric industry, which necessitate high sales efficiency in utility service selling
—There must be a definite assignment of responsibility for developing and conducting an organized training program. In that connection it is pertinent to introduce this important thought with respect to the overall Sales Department Organization. The training responsibility can best be assigned to an individual in the Sales Promotion and Advertising Division of a Sales Department, which has been organized on a functional basis classified according to the major customer divisions of general business.

There now remains the description of the benefits that will be derived from an Organized Training Program.

AN ORGANIZED TRAINING PROGRAM PAYS

The inevitable questions that would be brought up relative to an organized training program, are "What Does It Cost?" and "What Benefits would be Received?"

As to Cost: First, the type of program suggested need not necessarily involve expenditure in addition to that already being made in many cases. It may be more a matter of coordinating and systematizing the work now being done by many different individuals than one of spending more money.

Secondly, where additional expenditures are required they can be justified when a complete analysis is made as to the beneficial results that will be secured.

The problem, therefore, is not "What does Organized Training Cost?" but

(*Continued on page* 128)

Market Research and Dealer Sales Promotion

By R. E. Fisher

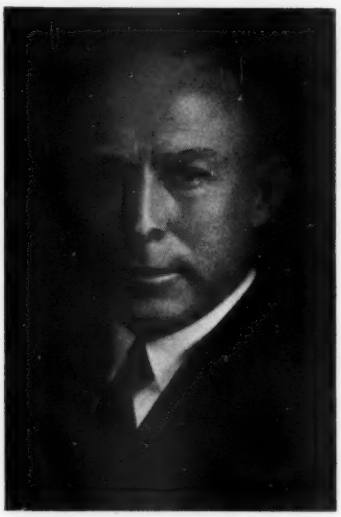
Pacific Gas & Electric Co., San Francisco, Cal.

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

TIME MARCHES ON!!!! We are living in a constantly changing world. Today living conditions, habits and the mental and economic outlook of our people is totally different than it was 30 years ago. Let us review some of the changes which have occurred in the span of our own lives.

We have all seen the evolution of transportation, from the horse-and-buggy days through the bicycle and automobile to the now rapid development of the aeroplane as a competitor in the transportation field. Electric refrigeration has changed the economic condition in the ice-manufacturing industry. Radio has made the nation a more closely knit unit as well as affecting the amusement industry. Talkies have replaced the old silent films. Making "milady" beautiful is taking $500,000,000 of the national income. No more does Mother bake bread and cake—these are now purchased at the corner bakery or grocery store. No longer does the housewife break her back with the broom and dust pan or spend hot, tedious hours with the old sad iron. Channels of distribution have changed. Cellophane has revolutionized the package market. Installment buying has increased the potential buyers by the hundreds of thousands. Some things have gone out and come back, as bicycles, pianos and liquor. The political structure of the world has changed, in many cases from monarchies and democracies to dictatorships. In our own country, we are changing from "Rugged Individualism" to Regimentation sometimes known as "The More Abundant Life."

We in the Electrical Industry are also faced with constantly changing conditions. We may have had a perfect Sales Plan yesterday, but is our plan of today designed to fit the changed conditions? How can we intelligently plan our work to get the maximum results for the money expended? What is our Market? Are our plans designed to get our share of the business? What is our share of the business? What is the relationship of sales per capita of electric



MR. FISHER

appliances as compared with total retail sales per capita? Are we giving proper consideration to the reduction of purchasing power as a result of Social Security deductions and increased taxes as they affect the incomes of our wage earners and business people?

To arrive at some of the answers to these questions, we must know more about the market possibilities in the territories we serve.

Development of a Market Research Program

In 1934, the Pacific Gas and Electric, a combination company, embarked on a program to develop the answers to some of these questions. The first step was to determine:

1. Present saturation by appliances and trend.
2. Percentage of home owners and renters. (Sales to renters of lighting and portable electric heaters).
3. Scope and effectiveness of our competition; trend, sales effort and territories affected by this competition.
4. Determination of kilowatt-hour usage of appliances.
5. Customer buying preferences. (Just begun).
6. Study of electric range and water heater business including investment phases. (No conclusions yet).
7. Study of dealer advertising.

We obtain this information as a by-product of the regular sales work carried on by our existing sales force, each salesman being required to make a minimum of 20 surveys a week. As a result, we have been able to secure, during the past four years, an inventory record of appliances in 400,000 customers' homes. This information, based on 80 per cent of our customers, has been recapped in figures of saturation by types of territory and types of appliances. It is the basic information upon which all of our recent sales plans have been built.

Other important by-products of the survey have been:

1. Forcing salesmen to cover their territories systematically,
2. Development of prospects for immediate sales—Company and dealer, and
3. Personalizing the Company's relations with its customers.

Having already secured surveys on 400,000 customers, we feel that we have a fairly accurate picture of the potential market in our territory, but we do not have the type of information desirable as to what our customers' buying preferences and habits are. In a recent pamphlet issued by Ford, Bacon & Davis, Inc., of New York, they gave a formula for sales resistance as follows:

What the customer wants minus **What the producer thinks the customer wants** = **SALES RESISTANCE**

We believe that the final element needed to make our market research more effective is additional information about what our customers think of our service and the appliances we are attempting to sell them. We are, therefore, instituting this type of survey in our Company. The information will be developed in the same way as our data on potential markets, i.e., through our existing sales force. The questionnaire will be simple in nature, but will contain information pertinent to the problems confronting us in our various territories.

The uses of such a survey are obvious. The development of campaigns on appliances to fit the wants of the customer, the development of advertising

copy and direct-mail material embodying the customer viewpoint, selection of appliances within the price range of the customer and financing of paper to fit the customers' abilities to purchase.

Other phases of market research include intimate and detailed studies of our program. As an example, we are engaged in sales research on the problem of electric range and water heater sales. To secure more intimate knowledge regarding all of the details of the problem before us in this field, the following factors are being taken into consideration:

1. Additional capital required to serve,
2. Cost of servicing,
3. Potential market,
4. Load characteristics,
5. Revenue characteristics,
6. Effect of selling offers,
7. Effect of commissions on dealer sales to Company salesmen,
8. Trend of sales over a period of years both Company and dealer,
9. Cost to sell over a period of years,
10. Amount of advertising done, Company and dealer,
11. Trend of selling prices and terms,
12. Trend of rates,
13. Trend of sales by competition (bottled gas, oil, wood and coal).
14. How customer can use and what does he want. (Utilization *desired* by customer—Reasons for and objections to buying, including operating cost—Price range of appliance—Method of financing—Installation costs, and any other items pertinent to customers' preferences or objections).

Market research has demonstrated its worth to this Company in many ways. For example:

Research in connection with domestic lighting sales revealed the largest potential market for new load. It is the highest rate electric business we serve. It is a market which offers the best opportunity to sell the low income and unprofitable consumer group as a means for building up their load through the sale of moderate priced equipment. New lighting load could be added without increasing the capital investment of the Company and it also added load which did not fall on the system peak which occurs during the agricultural pumping season in the Spring and Summer. Lighting is a subject which is receiving more and more public acceptance through the activities of the E.E.I., and the supporting campaign on Better Light-Better Sight. We have materially augmented our domestic lighting program, with a crew of specialty lighting salesmen who are not only selling equipment but are likewise rendering advisory service to our domestic customers on general home illumination. There is a need for the highest type of technically trained lighting men in this field.

SALES

In viewing our sales problems, we must always keep in mind the broad perspective of the responsibility of a Utility Sales Department. The continued existence of a Sales Department is contingent upon its ability to add load that would otherwise not be secured or to add it at a faster rate than normal growth. To do this requires the utilization of every possible outlet and the development of plans and methods consistent with good business practice.

The direct sales forces of most utilities hardly more than scratch the surface of the potential market. They must, of course, do the pioneer selling of appliances which do not have public demand or, due to special conditions, have no adequate retail profit for creative and aggressive selling by retailers. The utility must also assume leadership in the sale of quality appliances adhering to ethical constructive merchandising methods that will encourage the activities of all legitimate dealers.

Much has been said on the subject of "Dealer Cooperation." In our Company, we do not have a cooperative plan as it is generally thought of, but we do have a Dealer Sales Promotion plan. It, of course, embraces the element of cooperation, but primarily it is a plan that is designed to get more business through retail channels by encouraging and assisting dealers in more aggressively prosecuting appliance sales. It is a plan of utility leadership in supplying the driving energy that is and always will be necessary to bring about a maximum sales result through an augmented selling machine composed of heterogeneous individual characteristics. Briefly, it is a plan designed primarily for the benefit of the utility. It does not infer that the cooperation is going to be solely on the utility's side. In too many instances of cooperative programs, there is a tendency at times to retreat too far on the demand of the dealers. Our policy must, of course, be fair but it must be firm. Utilities should never retreat from the policy of maintaining leadership in sales. As an example—several years ago, we were petitioned by dealers to discontinue the sale of gas circulating heaters. Their contention was that public acceptance had been created for this appliance, the dealers were doing a good job and the utility's effort was not essential in the future development of the business. We felt that it was worth a trial and discontinued selling direct this one item. The contention of the dealer group was incorrect and, as a result, business fell off materially without the direct sales effort of the utility. We again reengaged in the business and sales materially increased. This is just one instance which shows the effect on sales by retreating too far.

Our sales effort is divided into two parts:

1. A direct sales force of 400 men engaged in the pioneer selling of load building appliances, and
2. The promotional work which is done in connection with the dealers and their sales forces of approximately 5,000 men.

The first problem which confronts us in our dealer effort is organization. All branches of the industry must be harnessed into an organization for unified action. In our territory, this is done through an organization known as the Electric Appliance Society. This group is made up of representatives from utilities, manufacturers, jobbers and retailers. Campaigns are held throughout the year at appropriate times to coincide with the retail viewpoint. All cooperative campaigns on appliances which the utility sells direct are sponsored by the utility. All campaigns on those appliances which the utility does not sell direct are sponsored by the Electric Appliance Society.

Supporting effort is given through the employment of what we term "Dealer Sales Promotion Representatives" and "Appliance Counselors." The Dealer Sales Promotion Representatives work with individual dealers suggesting store promotions and effective selling ideas, encouraging prominent appliance displays, outside solicitation and other activities which increase the dealer's effectiveness, stimulate his interest and improve his profits in the appliance business. Group dealer meetings are held to outline the plans and policy of the utility. Educational talks to dealer salesmen are given in individual stores. The Appliance Counselors do educational and promotional work with dealer people. They organize and conduct group demonstrations or appliance schools for dealers from an educational and sales promotional standpoint. They assist dealers in training demonstrators for work in their stores.

There is a tendency on the part of large retailers to abandon the outside specialty salesman on "cold canvass" selling. They are confining their efforts largely to the follow-up of leads obtained from sales floors. In a recent article in *Retailing*, they estimated that from 40 per cent to 70 per cent of their sales were obtained by this method. If retailers are going to maintain this policy, advertising to attract people to their

(*Continued on page* 182)

"Oh, Say, Can You See?"

Dr. H. E. Pine

President, The American Optometric Association

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

WHICH came first, the hen or the egg? We all recall the arguments in which we indulged in physics class while in school. We all remember the classic question—"If in the middle of the Sahara Desert, where there is no life of any kind, there should be a loud explosion, could the explosion be said to make a noise if there were no ears to receive and to register the disturbance?" Of course, we all recall the solution—that the explosion would not make a noise because a noise is only created when there is some hearing mechanism to receive the vibration.

What good is light without sight, and by the same token, what good is sight without light? Even if light can exist without sight it is unimportant. You have possibly heard the story concerning the argument being indulged in by the politician and the architect, as to which was the older profession. The architect insisted that his was the older profession, for, he said, the Bible was authority for the fact that in the beginning all was chaos and that there must have been an architect to bring order out of chaos. The politician said in the Bible the story of creation proved the exact opposite, because it said chaos existed, and certainly the politician must have been there first to create the chaos.

I don't know whether or not you realize it, but you are looking upon the "forgotten man." A couple of years ago the publication of the Consumers Research credited me with being the lighting industry's best salesman. While I was not forgotten by the Consumers Research, I have certainly been forgotten by the pay master of the lighting industry, for so far as I know, I am not on the payroll of any of the lighting companies. Consumers Research said that my type of salesmanship was particularly insidious because the patient had no way to protect himself against my clever approach, for, that by following my advice, which they would accept implicitly, they would be buying more current than they did formerly, and that I was boosting the interests of the lighting industry. I wrote the Consumers Research calling their attention to the fact that if the lighting industry profited by having the patients follow my advice to use efficient illumination, so far as I was concerned, they were perfectly welcome to whatever increase in income which might result. I pointed out to the Consumers Research that I very frequently recommended more physical exercise and that I did not doubt that some of my patients had followed my advice and taken up golf, but that I did not begrudge the sporting goods manufacturers the sale of golf clubs and sporting equipment on that account. I also pointed out, that on numerous occasions I had advised the consumption of more fruits and vegetables but that my advice to the patient was no less valuable because the produce merchant or farmer might have benefited. I did not receive a reply to this communication; in fact, did not expect one.

DR. PINE

Several years ago, a fellow, who happened to be a Swede, consulted a well known eye surgeon in this city, because of an injury to one of his eyes. His eye had become infected and, in order to save the sight of the other, it was necessary to remove the infected member. The doctor had great difficulty in obtaining the consent of the patient to the operation, but finally did so, upon his assurance that it would be possible to obtain an artificial eye, after a short wait, which would look just as good as his own natural eye. After the socket had healed sufficiently, he was referred to an optical house here in the Loop for the artificial eye. After the fitter had inserted the eye, the patient walked to the front door and held his hand over his good eye and finding, of course, he could see nothing, he set up a great howl. He insisted that the doctor told him that he could look just as well with it as with his own eye. It has its funny side to us, but it didn't have to the Swede. To some extent, haven't we all been making that same error of mistaking looking for seeing? I am sure that most of us have been lighting for looking and not for seeing.

There are several elements which must be considered, when we are thinking of lighting for seeing. First of all, there must be enough light for the task involved. No close application of the eye should ever be attempted with insufficient light. Secondly, there must be a proper distribution of light and an absence of glare. These simple facts are so well known to us that most of us fail even to mention them to our patients and this is a serious mistake. The comfort resulting from the optometrist's effort is so largely dependent upon having the proper light that a fifty-fifty partnership should exist.

The optometrist can and should take the lead in pioneering in this field. He is the logical avenue by which the lighting interests can reach the patient at the psychological time. The patient is in a most susceptible mood. He comes to the optometrist with uncomfortable eyes. The optometrist or ophthalmologist who sets out to furnish this patient with glasses or with medical treatment and stops there, without seeking to determine any contributing causes to his ocular discomfort, which may be resulting from improper light, is neglecting to do his full duty. He is failing to deliver 100 per cent service to his patient, unless he actually prescribes illumination as well as proper lenses. It is not enough simply to say to the patient, in a more or less casual manner, "Be sure to have a good light." The patient hasn't been educated as to what constitutes a good

light. The physician who prescribed a drug and neglected to prescribe the size of the dose certainly would be a rather dangerous fellow to consult. Isn't that just about what the vast majority of optometrists and ophthalmologists are now doing, when they prescribe lenses and fail to advise concerning the only element which can make the lenses, no matter how accurate they may be, of the slightest use to the wearer?

Vision is absolutely dependent upon light and good vision upon proper light. About a year ago, I checked with the sight meter the illumination in my office. I felt reasonably sure that the illumination in one room was not sufficient, but I will admit my surprise when I discovered that I had in one room only six foot candles of illumination, a degree of illumination barely sufficient for hallways and stairs and such, where no visual demands are made. I, at once, discarded the lighting fixture in this room and obtained a new one. I noticed immediately an increase in my own comfort; I finished the day without the usual fatigue.

I have checked the illumination in all the rooms of my house and made changes in several of them. I had only one reading lamp in the house which measured up to the standards of good lighting. These errors have been corrected and now my house conforms with the advised illumination.

I have made more or less of a nuisance of myself, by carrying a light meter around in my pocket and checking illumination in the offices of my friends, in railroad trains, and in only the most unusual instances have I found illumination to be adequate, and, then, in some cases where the illumination was sufficient, it was accompanied by a glare which to me would be unendurable. I have checked the illumination at the benches in some optical wholesalers' establishments and found men working at assembling glasses under 10 foot candles of illumination. Certainly, it is unfair of the optical shops to expect good workmanship from men who have been thus straining their eyes hours each day. I have tested the illumination on the desks of many office workers, and have found it to average a great deal less than 25 foot candles. And this led me into another line of thinking. There are millions of people in the United States today, wearing what I will call for convenience, tinted lenses, although, from a scientific standpoint, there is great objection to this term. Physicists call them ray filters or absorption lenses. I wonder how many of these tinted lenses prescribed, were prescribed after any real tests, to determine whether or not their use was necessary, or I might say, even advisable.

My own investigation leads me to the conclusion that it is a distinct mistake to prescribe a tinted lens, unless the amount of illumination is increased sufficiently to compensate for the reduction in illumination resulting from the use of "tinted lenses."

I have studied the absorption charts furnished by the manufacturers of the different commercial tinted lenses and find these charts show a great absorption of the extremes of the spectrum. None of which I have any knowledge, absorbs less than 8 per cent of the healthful harmless rays and some of the smoked lenses commonly used twenty years ago absorb as much as 88 per cent of all illumination, the good with the bad. This must be borne in mind when prescribing tinted lenses.

I would recommend to the illuminating engineers, when testing the foot candle illumination available for any given task, that the fact whether the worker is wearing glasses or whether he isn't, whether the glasses the worker is wearing are tinted or not, should be taken into consideration. Your sight meter readings are meaningless, unless these factors are taken into consideration. If, for instance, the worker happens to be wearing a No. 2 amber lens, which is very commonly used, there is an immediate loss of the tensity of illumination from 39 per cent on the red end of the spectrum to 75 per cent on the violet end of the spectrum, with an average over the yellows and greens of 40 per cent. Consequently, the light meter findings will have an inherent error of 40 per cent.

I would earnestly recommend to lamp manufacturers that the tiresome rays in artificial light be eliminated at their source by manufacturing lamps only of glass which has the properties for absorption of the rays at the two extremes of the spectrum. I know that to some extent this has been done, but I feel that there is a tremendous room for investigation and further improvement.

The optometrist, as I said before, is the logical contact man between the lighting interests and the public and I feel that if full use is made of the possibilities, that the optometrist can be of tremendous value, not only to his patients but to the lighting interests as well. I would earnestly suggest that the electric companies furnish responsible optometrists, who have provided themselves with either the light meter or the sight meter, postal cards on which the optometrist would not have to affix postage, and after the optometrist has, during his examination determined the occupation and by actual trial what he believes should be the proper illumination for this particular patient, and advised the patient of the proper illumination and has made this illumination an actual part of the prescription, he is writing, he should tell the patient that, "For your work, Mr. Jones, you should have—foot candles of illumination. Good sight must be brought about by a partnership between your eye doctor and lighting engineer. Your glasses, no matter how accurately prescribed, and ground, cannot deliver you satisfactory service unless you are using your eyes under proper lighting conditions. I am going to ask the Commonwealth Edison Company to send a man to your office and to your home and to see that you have the proper amount of illumination. My work cannot be satisfactory unless the other partner of this transaction does his part. There will be no charge to you for this service." I would then fill out the postcard with the name of the patient, his address and phone number and the amount of illumination advised for his particular case and drop this in the mail box. It would assure the representative of the Commonwealth Edison Company entree and a courteous audience.

If the patient fails to avail himself of the scientific advice given him by the lighting engineer, he alone is the sufferer. This method would undoubtedly impress the patient with the scientific worth of the optometrist's examination and of his genuine interest in his ocular welfare. It would immediately place the optometrist so serving him in a class in the patient's mind far above the average spectacle seller. He would see the difference between the professional service and the merchandising transaction. The optometrist would gain, the lighting interests would gain and certainly, most of all, the patient would gain increased eye comfort.

The old saying about "the strength of a chain being that of its weakest link" applies without question in this case. Without eyes, no light is sufficient, without light no eyes are adequate. Somewhere between these two extremes lies

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Sight Saving: A Co-operative Program

By Winifred Hathaway

Associate Director, National Society for the Prevention of Blindness

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

TODAY we are hearing more about business than ever before—big business, small business, business of every type. In any business conducted on a large scale there are what may be called super-partners, each selected not only because he can do a good job but also because of a particular contribution he can make in the field for which he is especially qualified: production, selling, advertising. In addition to these super-partners there are those all along the line equally essential to the carrying out of a successful enterprise. In the small business the administrative machinery may not be so complicated, but in all business, large or small, with the exception of those engaged in carrying out definitely mechanical actions, each must know not only his own job but enough of the other fellow's job to make the whole conduct of affairs a co-operative undertaking.

There is another important aspect in business relationships today. A great majority of business concerns are dependent for raw material on some source outside of themselves, and each must be able to judge as accurately as possible how and when he may obtain the materials that go into the making of his finished product. The intricacies may best be demonstrated by the example of a child in a city far distant from the manufacturer, who is deprived of the promised new desk, since the manufacturer cannot obtain the necessary material for production because of a steel strike; not only must the child continue to use his obsolete desk, but all along the line, trade is at a standstill. Miners of iron ore are held up on outlay; steel manufacturing is stopped; middlemen are out of employment; freight companies that usually handle the product have empty trucks and railroad cars; the manufacturer may not fulfill his contract. This interrelationship has to be taken into account in practically all business activities.

Seeing is one of the largest of business enterprises in the history of the world. It affects the life of every individual in every country, perhaps most of all the lives of those who do not possess it. This business of seeing is one of the best examples of the intricacies of big business; its super-partners are the eyes through which to see, the light by which to see, and the brain to interpret the message, and innumerable other functions and functionaries essential to the success of the undertaking. The failure of any one of these to co-operate jeopardizes the success of the whole.

MRS. HATHAWAY

The eye must be able to call upon resources outside of itself, as well as on those within: light, blood supply, nerve control, and a thousand other sources of power, in order to carry out its share of the seeing load. Light, in turn, must be able to call upon the eyes and the brain, in addition to its fundamentals and their accessories. So far as the third partner, the brain, is concerned with the business of seeing, it must call upon the other two as well as upon its own functioning powers, too numerous and too complicated even to catalogue.

It is evident that those who give eye service do not have to be illuminating engineers or brain specialists, and that illuminating engineers and manufacturers and salesmen of lighting equipment are not expected to have the training of those engaged in eye work. The question is just how much should each know of the work of the others. It is always more or less dangerous to lay down inflexible rules and regulations; hence, only suggestions can be made.

So far as those engaged in any part of the lighting end of the business are concerned, it would seem that some background of the evolution of the eye might be desirable. As a result of long years of research, Dr. Thomas Hall Shastid has made available material, fascinating alike to grown-ups and to children, showing this evolution from the time of the ameba—that curious bit of protoplasm which, because it multiplied by division, had to be all eye; through the long periods when changes in growth and structure made necessary not only localized eyes, but various types of protective devices and adaptations to needs and to environment, making it possible under such changed conditions for the eyes to serve the primary purpose for which they were intended from the beginning: to obtain food and to avoid enemies. But evolutionary changes take eons of time, and many difficulties assail eyes that for millions of years were not called upon for long and intensive use at the close range demanded by modern conditions.

The illuminating engineer and his associates will surely be interested to know something of thinkers who, in advance of their time, performed seeming miracles in preventing diseases that affect the eye: Jenner, an obscure physician, who learned from observation of milkmaids of the possibility of making people immune to smallpox, one of the chief causes of blindness and impairment of vision in the centuries before his discovery; Pasteur, who, in demonstrating his theory of the transmissibility of germs, was indirectly responsible, among many other benefits to humanity for preventing much loss of sight; Koch, who, by his discovery of the tuberculosis bacillus, opened the way not only to stamping out the disease itself, but also its effect on the seeing process; Schick, who, by developing a test for diphtheria, turned the feet of thousands of children throughout the world away from schools for the blind; as did Credé by his discovery that infection of the eyes of the

newborn could be combated by the use of nitrate of silver; and countless others who made human test tubes of themselves in order that suffering might be alleviated and if possible, eliminated.

They will be interested to know how the advances in science have made possible miracles of operative procedure undreamed of even a generation ago, yet now performed daily to prevent blindness and deterioration of sight and to restore vision. But these things would not have been possible had there not been a wider variety of co-operative efforts: those of Helmholtz, for instance, who studied the work of his predecessors and invented the ophthalmoscope, by means of which physicians can see within the eye and thus discover any difficulties, not apparent without this aid, which might affect the process of seeing; Morton and his followers who made possible anesthetics to save patients from the unendurable pain of such operations; Descartes, Kepler, Halley, Young and others who studied the difficulties of refractive errors and devised artificial lenses, not only to take the place of those it was necessary to remove from the eye but also to compensate for the errors of refraction that make it impossible to bend the rays of light in such manner that the image shall fall on the receiving station, the retina.

They may, too, be interested to know something of the structures of the eye itself and how each part functions, in order that they may make the most of the commodity they have to offer, illumination.

And what should those equipped to give eye service know of that second great partner in this business enterprise, light? Usually, they, too, will wish to have some background based on its development.

Rockwell Kent has recently produced a little folder which tells the story most graphically. The outer page is black with the exception of a legend in white letters which reads: "In the beginning God created the heaven and the earth. And the earth was without form, and void; and darkness was upon the face of the deep. And God said . . ." On the inside page he has represented beneficent hands setting in the heavens a great sun, its glory radiating to all parts of the dark earth and quickening all things to life.

They are familiar with the story of primitive man, living from sun to sun, and having no need of light at night other than that of the moon and the stars; but caves were cold and often damp and, under the cover of the darkness, wild beasts wandered in search of their prey. The legend tells how Prometheus, sacrificing himself for humanity, reached up into the heavens and brought down the fire that was not only to give warmth and protection, but to awaken in man possibilities of eliminating his darkness.

They cannot fail to be interested in the development through the ages of the various forms of artificial illumination, from the flaming torch to the shell and stone lamps burning fat of animals, through the much later development of Greek and Roman methods, and the centuries when candles, whale oil and kerosene lamps and gas, one by one, became the chief source of artificial illumination; and of no less interest is the old legend of the modern Prometheus, Franklin, reaching up into the heavens with his kite and bringing down the flash of lightning into the key that was later to unlock the doors behind which were hidden the mysteries of electricity.

They will want to know, too, something of volts and amperes, of ohms and watts; of how the great taboo of glare made generators of power and manufacturers of lamps come in course of time to recognize the fact that the unshaded clear glass bulb was not a respectable member of society in the great business of seeing; of how inside-frosted lamps were provided, an improvement, but still unsatisfactory, until manufacturers began to fill the gap with shades and, eventually, with luminaires, gradually coming to a realization that they must produce fixtures that would contribute to eye comfort, eye ease and to the accuracy and speed of seeing; of how discouraging it was to put in the most up-to-date equipment only to find that dark paint and woodwork and grimy ceilings robbed the illumination of its efficiency, and that polished surfaces were sources of that very taboo—glare—that the manufacturers of illuminating equipment were trying so hard to overcome; of how the educational program of this great business of seeing had to be widened to include those responsible for the decoration and equipment of homes, schools, offices and factories; how glossy paper and poor print were also disqualified as members of this society, and printers and publishers began to be looked upon as necessary participants in the business of seeing.

If, in some such manner, each becomes conversant with the works of the others, it will be evident that cooperation, based on understanding and education, has been and must continue to be the keynote of advance. Of late, eye physicians have begun also to realize the necessity for understanding the kind and type of illumination under which the eyes of their patients will best work; and there is a growing recognition of the fact that if eyes are so affected by malformation, errors of refraction, or disease that they cannot carry their full share of the load, compensation must be provided in the form of better illumination. This is being demonstrated nowhere better than in sight-saving classes, in which special illumination is provided to meet the requirements of children suffering from seriously defective vision. Conversely, it is becoming realized that if illumination is inefficient, the eyes are forced to carry more than their share of the seeing load.

But for all education is a continuing process. What is considered best today may have to be discarded tomorrow, because advances in science may have made the things of yesterday obsolete. There are, however, cautions to be observed: the wise physician, even though he hopes a new technique or a new remedy will be beneficial, is exceedingly careful to perfect the technique and to try out the remedy before he uses the one or prescribes the other, and, in the meantime, he attempts to educate his patient to go forward with him. The wise manufacturer and the wise salesman will do well to follow this lead; otherwise they may defeat their own purpose and may, rightly or wrongly, be accused of making recommendations for the purpose of selling power or equipment, rather than for the purpose of providing illumination suited to the needs of the prospective user.

The great part that seeing plays in modern educational methods is leading school systems, in particular, to give greater consideration than ever before to the important question of illumination, natural and artificial. To those who are familiar with the intricacies of illumination it is often a shock to learn that not only teachers and principals, but often business managers and superintendents, are ignorant of even the most elementary facts that form the basis of illumination: that light can be measured and that there are simple devices sufficiently accurate to be used to give a satisfactory measurement. They are usually surprised to find that so far as the eyes of the children under their care are concerned approximately fifty per

cent of those in the usual classroom are in the red; and, once convinced of the effect of inadequate and otherwise unsatisfactory illumination on the learning processes, many are willing to make whatever reasonable amends lie within their power.

This is the time for wise judgment. It is still today and not tomorrow, and the adviser who talks in terms of the fifty or one-hundred-foot-candles that may tomorrow be the criterion of good illumination usually loses the opportunity for any improvement. Since the possibility of obtaining such goals under present conditions is too remote to be practical, the discouraged administrator loses confidence and discounts the real necessity for change, believing, often, that it is a toss-up whether it is better to have the eyes or the school system in the red.

In school buildings and other structures that are contemplated, or in process of construction, it would indeed show poor judgment on the part of the adviser not to bear in mind tomorrow's possibilities and recommend adequate wiring for the increased needs of the future; but in buildings in which wiring will carry only slightly increased loads and re-wiring is not feasible, the adviser has the responsibility of giving the most careful consideration to increasing illumination where it is most needed and of recommending luminaires best suited to the requirements. This may sound exceedingly trite to those whose job this is, but the layman can judge only from the results, many times quite unsatisfactory because of poorly thought out and poorly executed plans. Two examples may suffice.

The proprietors of a bookshop in one of the leading cities were anxious to have their reception room not only as attractive as possible but also to serve as an example of good illumination for all those who came in to select books. Much time and thought were given to decorations, with very successful results. The walls were in a soft, warm gray in dull finish, and a very harmonious shade of blue was used for the woodwork. The ceiling was slightly off white, and the furniture simple but pleasing. Excellent arrangements were made for browsing among the books. Surely this setting was well adapted to an effective system of illumination. It was necessary to have two girls at work in the room, one typewriting addresses and other material copied from cards, the other interviewing people, using the switchboard, and doing a considerable amount of consulting catalogues of title, publishers, etc., readily recognized as very intensive close eye work.

The illuminating adviser recommended and had placed luminaires somewhat difficult to classify as to type since, although evidently intended for indirect illumination, they had open circular spaces throwing the light against highly polished aluminum, thus causing a most uncomfortable glare in the eyes of each worker from the luminaire opposite her. A small portion of the luminaire selected was translucent, and the lamp was placed so near to it as to cause a spot of exceedingly trying glare. Withal, the workers were getting only seven-foot-candles from four luminaires installed in a comparatively small reception room. Recessed shelves for books were covered with glass, causing a most distressing reflection of the luminaires, and the shelves were so illuminated at the top center only by an unshaded, inner-frosted lamp that the tops of the uppermost center books were brilliantly lighted while those only slightly below were in shadow and not even their titles could be read.

It must be evident from this exposition that no careful planning or thought was given in order to install the system of illumination best suited to the needs of the situation, or to educating the proprietors to co-operate by doing away with the glass reflecting surfaces.

The second example is that of a very poorly proportioned classroom, long and narrow, used as a study hall for high school students. The adviser recommended and had placed a quite unnecessary number of semi-indirect luminaires of rather high brilliance, spaced very close together in two rows the full length of the room, reaching even beyond the front desks. No one could fail, on entering the room, to be conscious of the resulting discomfort, and study hours under these conditions became a waste of time. The pupils were either so irritated that they could not work effectively, or, closing their eyes to shut out the discomfort, many of them found relief in sleep. The aim in illuminating this room was to make it an example to be followed in other rooms in the building, but the results were so unsatisfactory that the superintendent refused to have any other so-called improvements made, and a fine opportunity for capitalizing on the big possibilities of seeing was lost.

Examples of good judgment, careful planning, and excellent installations are too numerous to mention, but, as in the case of almost every profession, all are likely to be judged by the unsatisfactory results of the few. This may be and often is an erroneous judgment; but, since such is the case, it behooves each to realize that he shares the responsibility of all for the successful conduct of this big business of seeing.

"Oh, Say, Can You See?"

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the proper combination. It is up to the optometrist and the lighting engineer to find it.

I was invited to tell just how the optometrists fit into this picture. I have enumerated a few ways by which the optometrist can be of great value. Let me say in passing that I am not remotely interested in the lighting industry as such, and personally I don't care a whoop whether or not you make money or lose it. I am interested only in the visual welfare of the people of this country, and only because I know that sufficient illumination is highly important, am I here today.

The optometrists in this country are conceded to take care of the visual needs of more than 70 per cent of the people of the country. The lighting industry, in my estimation, would be showing just plain horse sense to cooperate with the group which could be of such great potential assistance to the industry. Some in this room may have an extremely hazy idea as to the work of the optometrist. Others of you may have a very distorted view, and for that I certainly cannot say that I blame you, for if you have based your opinion of optometry on the disgraceful conduct of a few of our worst optometrists, you could not be expected to have a very high regard for optometry as a profession. The price-advertising, high-pressure salesmanship type of optometrist, is no more representative of the profession of optometry than is the same type of practitioner representative of the profession of medicine or dentistry. Every group has its black sheep.

Optometry is not a part of the practice of medicine and never has been. The Courts have decided this point time and time again. Optometry's ancestry is traced not to medicine and surgery but to physics. Optometry is taught as a separate and distinct profession in a number of the country's leading universities. The course is four years duration, after which the graduate is obliged to pass a strict state board examination. Modern graduates in optometry are thoroughly grounded in their subjects and are doing an ever increasing percentage of refraction in the country.

I thank you for inviting me to speak before this group, to assure you that Optometry stands ready to cooperate in any movement which will result in better seeing conditions for the people of the country.

The National Adequate Wiring Program

By W. E. Sprackling
Chairman, Adequate Wiring Bureau

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

DURING the course of these meetings, you have heard, or will hear, of commercial activities in our industry which have proved their worth and to me they are truly amazing accomplishments. They have passed the formative period, they can no longer be considered experiments, they have gone far beyond that period and are now big, productive, worthwhile members of our electrical family. They are not only capable of, but they are actually doing, a man-sized job. I am proud to be connected with an industry that has the brains to conceive, and the courage to go through with, such an outstanding program.

And so, I come before you with a deep feeling of respect, to report the advent of a new member of our electrical family —a real "blessed event"—the National Adequate Wiring Campaign—a mere babe in arms less than two months old. I assume, or at least I hope, that you want to know how things are going with the "new baby." And so, what I have to say, really is a report from the nursery.

I am taking for granted that you are glad the baby was born. I think most everyone in the family wanted it. I believe they felt it would be a good thing for all the other members of the family—I might almost hazard the statement that most of us felt it a necessity.

Oh, I know there were some skeptics who felt that the "new baby" couldn't even be conceived, much less actually brought into being. But we fooled them there. Actually, it promises to be a healthy, productive addition, worthy of our pride. And, with a little sensible nourishment, it ought to grow to be as highly successful as all the rest.

And, may I at the very beginning, ask your sincere cooperation in bringing up this baby of ours. Don't let's start spanking it because we think it may be "all wet" in a certain place; don't let's start worrying about the dangers that may beset it. Let's take it as it is. Actually, it is fundamentally strong and with a bit of enthusiastic bringing up, it will fight off the financial measles and the whooping cough of procrastination and inactivity, and really start to help support the family before long.

MR. SPRACKLING

I suppose I could continue this report in a metaphorical way, but it might become embarrassing when I got down to exact details of a baby's life. So I had better stop before I put my foot in it.

Let me say at the start that it is particularly pleasing to me to talk to this group of utility men, because if it were not for the broad-minded attitude of the utility representatives on the Executive Committee, I seriously doubt if we would have succeeded to the point we have. I have personally worked on somewhat similar committees, so I know whereof I speak. And I say, without fear of contradiction, that if Mr. Skinner and Mr. Eastman had not brought to us the unbiased advice and the excellent ideas that came from a wide range of experience, we would have failed. As it is, I sincerely feel we can well be proud of the results to date. I am not throwing bouquets just to be a good fellow. I am making a plain statement of fact.

It is not my purpose to take time to explain the details of the Adequate Wiring Plan. I assume you have all received copies of the Plan Book and available material. They tell the story. I would rather tell you what has been accomplished to date and leave with you a thought as to the future.

May I state right here that the main thought behind the whole plan is that it is one of an educational nature. There is no thought of promoting specific products; there is no desire to suggest particular methods of installation. And on this latter point, I say that it would be ruinous to the whole project to indulge in anything of a controversial nature.

It was the idea of the committee that the plan was to be as broad and as flexible as possible. I feel that you will agree that in this we were successful. Roughly there are two main objectives. They are:

1. To promote sufficient branch circuits with adequate copper in the wiring itself, and,
2. To install plenty of outlets and switches so that the power path, so adequately provided by the utility to the door of the home, may be made adequate to its destination—namely: the lamp or the appliance.

The flexiblity of the program lends itself for adaption to any set of local conditions. There is no set procedure. You can take a nibble at it, or go the whole way; you can fit it into your present plan if you have one. Whatever the local program may be, it most assuredly can be tied in with the national plan. The main thing is to make the public conscious of the need for adequate wiring in the home and find a way to readily obtain such adequacy.

And now you probably want to know what has been done so far. Of course, it is too early to talk of accomplishments. But, I can tell you that the interest displayed to date is amazing.

Already eight states contemplate statewide operations.

Fifty-one cities in thirty-one states have ordered thousands of pieces of promotional literature.

One hundred and twelve cities have asked for information.

We even had one request from Hawaii.

These numbers are being added to daily—so much so that this report must be out of date already.

Two field men have presented the subject to thirty-one communities.

One large utility system has six field men spreading the gospel to its local units. Other holding companies and service corporations have received the story and are clearing the way for the message to be taken to their operating companies. And so it goes.

You know how the electrical press is supporting the activity. But you will be glad to know that the national women's magazines are cooperating and will continue to cooperate to the fullest extent.

We had a meeting with the editors of many of these women's magazines recently and I was truly amazed—not only at their interest, but at their knowledge of the need for something like this campaign. They feel that a great public service is involved and I know they will do everything they can to see that the public is informed of the benefits to be derived through the installation of adequate wiring. If figures mean anything, at least one message has already gone out to about 12,000,000 readers of national women's magazines.

What I have said relative to women's magazines is equally true of architectural and building magazines. Approximately 1,500,000 copies of such publications have also carried the message to their readers.

So much for publicity we are getting —now about national advertising. The national funds do not now permit of purchasing space for this purpose. However, there is another approach to it and that is the backing our activity will receive through tie-in of advertising of manufacturers with the program. Already there are evidences that this is being done. Several of them have started to include the national emblem in their advertising. I feel confident that much more definite participation will follow.

Our story has also gone out to federal agencies that have an interest in home building. In this connection, it is interesting to note that only recently the Federal Housing Administration included wiring systems in homes as being eligible for F.H.A. insured mortgages. This is of utmost importance and should be taken advantage of.

I know that some of the utilities have shied away from old home wiring on account of the financing feature. But, now that it can be financed through F. H.A. insured mortgages, there is no reason why the rewiring of old homes should not be included in local campaigns.

As a matter of fact, I personally have been very much concerned over the fact that many local activities might be restricted to new homes. It would be too bad if this were so, because with the present condition of affairs nationally, the movement toward new home building may be considerably delayed. So why wait? There are 22,000,000 old homes to be rewired—22,000,000 homes where more lamps, more appliances, can be sold, if only the wiring systems could properly handle them.

I appreciate the problem the old home field offers. It is a difficult one to handle; the way toward it is obscure. But it is a problem that must be faced. A way must found. But it won't be found until we tackle the problem with determination and courage.

Naturally, the committee is delighted with the reception the plan is getting. The enthusiasm is inspiring. But, there is one thing that I, personally, am fearful of. I wonder if there is too much of an urge to get started—too much activity and not enough thought. I hope not, because haste most assuredly will make waste.

It took well over a year to work out the kinks in the national campaign. To think the local job needs no thought is a fallacy. Just to distribute literature willy-nilly would be wrong. Just to run ads in newspapers would be wasteful. A carefully planned follow-up is essential. Promotional material of itself is not going to make home owners fall all over themselves to give us a wiring job. And some of the enthusiastic people in the industry who are inexperienced in work of this kind, are actually going to be disappointed when there is no avalanche of business. Consequently, when the business doesn't roll in, their enthusiasm will be dulled and they will lapse back to their accustomed lethargic attitude. That would be a catastrophe.

Make no mistake, gentlemen, this adequate wiring job is a long one and a tough one. It is no place for a high-pressure, one-call-and-quit salesman. Just remember that it is an educational campaign and no one acquires an education overnight.

Please realize that in talking to you of my fears, as well as my hopes, I do so in full realization that some of you have long been doing work of this kind, many are just starting in, many plan to start shortly. You are the rallying point for local activities. Without you, little would be done. You know your local problems. I don't. And so I hesitate to recommend and suggest. But, just the same, I am going to.

First, may I recommend patience—patience in listening to other branches of the industry with their problems, valid or invalid, patience in hearing people who put forth ideas with a purely selfish interest. Take the time to hear them through and sell them a vision, showing each man his big or little place in the picture.

Second, while I know there will be many local campaigns, I am hopeful that quite a few will be started that will be outstanding, that we can point to as models, that will not be mere activities but real campaigns. I picture a campaign laid out by men with vision and courage, a campaign done in a big way with properly scheduled newspaper ads, with proper distribution of promotional material, with adequately prepared talks to parent-teachers associations, with timely use of sound slide film and the organization of home economic classes, plus, and this is the important point, the final closing of sales through actual solicitation in the home.

Then, too, it should be a campaign so organized that only high-grade contractors can participate—no irresponsible fly-by-night with his office in his hat—but contractors who are properly equipped to do many comparatively small jobs within a certain restricted area detailed to them. But the main thing is that all of this procedure should be carefully planned ahead.

You say it can't be done. I say it can. And I have so many proofs of things that couldn't be done that were done, that you can't laugh me down. And what's more, there must be scores of men fitted to do the job that feel as I do. And there must be utilities with the courage to go through with it to the bitter end so that they may enjoy the sweet fruits of success.

I am going to stick my neck out just a little farther. I am going to say something that some of you won't like. It's this. This adequate wiring job is a duty of yours—a duty to the public, to your customers. You have simply got to tell them the facts. And the facts are that they don't use all the current that they pay for. No don't shoot yet. I didn't say "they don't get all they pay for"—I said "use." I know they get full value at the meter and that is where your responsibility is supposed to end. But the customers should be told some of the current they pay for at the meter

is either wasted or isn't as efficient when it gets to the place where it goes to work—at the lamp or the appliance. They should be told that the lamp doesn't give as much light as it should, although it costs as much or more to run. And the appliance doesn't work as efficiently, but costs as much or more to run. I say that's part of your job.

Now remember, I say this personally. The Adequate Wiring Committee has voiced no such thought. So I accept all responsibility. And I'll hazard a guess that if you don't believe me now, you will some day.

One more thing and then I am through. I said this job was your duty. I will go farther and say it is an absolute necessity also, doubly so if you are to continue your Better Light-Better Sight, Modern Kitchen Bureau and your other promotional activities.

I am informed that the industry has, to date, sold approximately 6,000,000 tagged and untagged IES lamps and that the ultimate market, conservatively stated, is not less than 100,000,000 of these lamps. What do you think the lamps already sold and those to be sold are going to do to the wiring circuits? There must already be evidence of overloading which will get worse as more lamps are sold. Isn't this going to result in a drag on the sale of lamps and dissatisfaction on the part of those who purchase and use them?

What about all those vacuum cleaners sold last year? — those cookers and roasters, those mixers, those percolators, and irons, toasters, radios and refrigerators? (I don't mention ranges because they get a separate circuit anyway.) Just where are you going to put them? —on present circuits? God forbid! No, my friends, go do a job on adequate wiring; prepare the way and the appliance will follow as naturally as night follows day.

Organized Training in the Utility Sales Department

(*Continued from page* 118)

"What is the Penalty for neglecting it further?"

There are many beneficiaries of an Organized Training Program in the Utility Sales Department, for example:

The Public Benefits — Insofar as utility sales activities are made more efficient and have for their objective the sales of increasing quantities of energy used to produce better living and more attractive, comfortable, and convenient homes, and greater profits and productivity in business establishments, the customers benefit directly from organized sales training.

Adequately trained sales personnel speed up the process through which utility customers learn of the valuable assistance and many benefits utility services provide them. Likewise, adequately trained sales personnel effectively reduce or eliminate the mental inhibitions which cause customers to hesitate to use utility service freely, because of a lack of understanding of the cheapness of the service and its value to them.

Again, adequately trained sales personnel keep customers informed of new developments in equipment through the use of which the Residential and Farm customers can enjoy Better Living and Commercial and Industrial and, in many cases, Farm customers, can use the service to increase their productive ability.

Dealers Benefit — More adequately trained utility sales personnel, through doing a better job in their territories, provide practical assistance to the dealer and his personnel which, in the final analysis, results in *More Sales—More Profits* for those people.

Utilities Benefit — Organized sales training is profitable to the utility owing to the fact that Better Sales Results may be secured at the same or lower expense.

The personal benefits that the utility sales employe enjoys as the result of organized training makes him more confident and more effective in the performance of his daily tasks. Likewise it is evident that his employer is doing everything possible to make it easier for him to perform his job and to develop his abilities to their fullest extent.

Organized sales training of new recruits benefits the Utility in that it saves loss which may result from the extra time used by an untrained man before getting into production. Also, it saves the extra expense and salary during that period, as well as minimizing the cost of extra office and field supervision. Again, a vital point is that profit on business lost to competition during the so-called "fumbling period" is saved. And, finally, possible detrimental consequences to his morale, confidence in himself, and the like, resulting from a feeling of self-reproach to his own mind, that he has not made a creditable showing before customers and prospects are minimized.

So, too, organized training is most beneficial for the typical veteran employe. Oftentimes, such an employe has discarded and forgotten more good technique than he has retained, and possibly the longer he has been employed, the more good ideas he will have thrown away or forgotten. Training such veterans may, therefore, be termed "retraining," in that it involves a process of reminding him of what he already knows; of putting effective old technique into new packages, so alluring that he will utilize them to his benefit. This point of view was stressed at length by Burton Bigelow, Consulting Sales Manager, in the American Management Association publication, "Personnel," for February, 1938.

In summing up the benefits to the utility that result from organized training, it should be noted that they include:

—Increased sales of Service
—Better sales of Service
—Reduction in selling costs
—Unification of all selling effort
—Making supervision of sales personnel less difficult and more satisfactory
—Development of higher type of sales personnel
—Reduction in turnover in sales personnel
—Better relations with Sales Allies
—More effective sales control, and
—Improved public relations.

Thus, it can be seen that organized sales training is a sales promotional responsibility of the first rank. New Services, New Uses and Applications of Services, New Developments by manufacturers, utilities, competitors, and countless other agencies—all these spell disaster for Sales Programs unless broad sales training is carried on constantly and systematically. As Mr. W. H. Prentis, Jr., President of the Armstrong Cork Company, said in a recent bulletin:

"There is nothing more trying, nothing more exacting, than the continued effort necessary to train salesmen, but nothing pays bigger dividends. Sales training is a perpetual job. But it carries with it the real gratification of achievement, provided the job is well done."

To the same extent that organized training is paying dividends in other industries, it offers promising possibilities for improving the selling of Utility Service.

Running Water—The Family Deserves It

By H. E. Dexter

Chairman, Electric Water Systems Council

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

THE "Electric Water Systems Council" was organized in 1933 to build load on rural lines. This organization, which acts as a coordinating agency for the pump manufacturers and the Edison Electric Institute, was founded on the beliefs that—

(a) One of the first uses for electricity in the rural area, after lighting, is to operate a water system.

and

(b) That after electricity is made available, running water marks the beginning of a better standard of living.

Translating this into other terms, it was the feeling of the original committee that a real aggressive cooperative program for the sale of electric water systems would benefit—

(1) The customer—by making possible better living conditions.
(2) The Utility Company—by making more profitable customers.
(3) The pump manufacturers, dealers and distributors by the sale of more Electric Water Systems.

In discussing the results to date, I shall reverse this order and leave the customer to the last, because it is this item on which I wish to spend the most time.

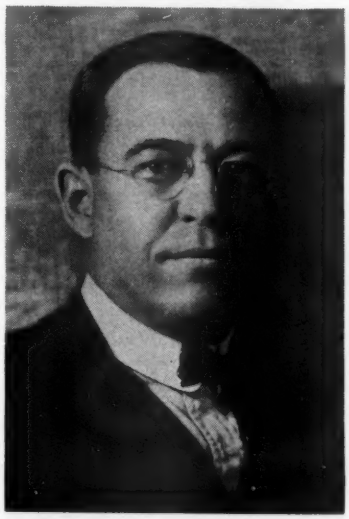
Pump Manufacturers

The pump manufacturer has put real effort behind this program as well as the utilities. The results for the five years that the Council has been in existence are shown in the installations enumerated below:

1933	57,000
1934	77,000
1935	108,000
1936	154,000
1937	190,000

The pump manufacturer has been well repaid for his effort, but how about the utility company? These water systems use some electricity, but to my mind this is only a small part of the benefit which we obtain from their sale.

As I stated before, one of the original urges behind the Council movement was the belief that running water, after electricity was available, marked the beginning of an improvement in the standard of living, and that, with the increase in the standard of living, the use of appliances and the sales of kwhr would increase.



MR. DEXTER

An analysis of 3661 farm customers from the east central part of the United States shows that, barring the washing machine and radio, the farms with "Water Systems" have the best appliance saturation.

On the farms with "Water Systems" there are approximately three times as many ranges and almost two and one-half times as many refrigerators as there are on the farms without "Water Systems," although the percentage of ownership is the same. The kwhr usage is approximately *twice* as great on the farms with the "Water Systems" as on those without.

This is a real testimonial to the value of the "Electric Water System" to the utility.

Quota 1938

For 1938 the Council has adopted a quota of 250,000. You may say "a bit ambitious" with business conditions as they are. On the other hand, there has been a large increase in rural lines in the past year, which means an added market. In addition, there are available some excellent tools to help in getting this business—

1. We have an excellent two-color broadside, which we urge every utility to mail to their prospective "Electric Water System" customers.

This broadside emphasizes the fact that F.H.A. is now prepared to finance not only the Electric Water System, but the drilling of the well itself.

2. A new booklet "Running Water" is available free to the utility company for every customer to whom they send the broadside.

3. A sound slide film stressing the advantages of "Running Water."

4. A dealer booklet "Where Water Runs Dollars Flows." This booklet is being supplied by the pump manufacturers to all of their dealers and is being followed up by the pump manufacturers with a real program for the training and development of better pump dealers.

The Customer

I have left the customer until the last because he is the most important. If we give our customer a good "Electric Water Service" at a reasonable operating cost, I am convinced we can make money out of it. However, I am not certain that all utility representatives know just what running water means to his family, so I have a farmer with me, a man who knows farm conditions, and I am going to ask him to tell you what water under pressure means to the farmer.

Introducing Mr. Wigsten—

A FARMER APPRAISES HIS "WATER UNDER PRESSURE" SYSTEM

By F. M. Wigsten

I am a farmer on a New York State farm. I have lived on farms practically my entire life. The first farm I remember living on with my folks was a side-hill, run-down dairy and crop farm, which my father bought in 1900. At the time he bought it, the *land, buildings* and *tools* for *farming* were all unimproved.

He bought this farm, he tells me, as he thinks back, for two chief reasons: First, because *the purchase price was low,* and second, because a man with whom he was acquainted held the mort-

gage and he was willing to continue to carry this mortgage for nearly the entire amount of the purchase price.

Now, if you will pardon personal references throughout this discussion—what do you suppose was the first thing that happened on this farm in the way of making improvements? Remember now, the land was run down, the buildings were in poor condition, tools were pretty well worn, and, of course, the interest was due currently.

Well, my Dad tells me he took what he considered at the time was a *long chance*. He took valuable time and he reached into a mighty slim pile of cash money. He used the valuable time to dig out and wall up a side-hill spring and the money to buy and install a wooden pipe from that spring to the house and from the house on down to the barn.

Now, I know that in doing this he was flying *directly into the face* of opposition. I suppose our neighbors in the community decided right then and there that he might a darned sight better have paid that money off on the mortgage. They probably wondered how he could get his money out of the nearly new hand pump in the back yard. They probably had the water pipes freezing up in the kitchen and flooding the place. I don't know what the mortgage holder thought, but he probably stuck his cud of tobacco in the other cheek, raised his eyebrows, and maybe rubbed his hands together. I don't remember what my Mother said out loud, but I'm pretty sure I know what she said under her breath, "Well, if I don't have to carry water, I'll have time to help carry some other part of the load."

Gentlemen, I was too young to realize it, but I firmly believe that it was my Dad who invented that slogan long before any sales executive wrote it down; "Let the water do the running." Now, I try to think sometimes what my Dad must have thought when the water started running from that old wooden pipe. The tears could easily come to my eyes right now as I think about it, because it must have been a momentous occasion to him; it most certainly was to me, I firmly believe—when the water actually ran into that old black sink in the kitchen and by-passed through to the old wooden trough in the barn—that made history for this family, and don't you think it didn't. I'll bet he said, "To hell with neighborhood gossip" and "Mortgage holder, watch my smoke—if it is that easy, I'm a success from here on."

MR. WIGSTEN
Who tells of his experience with electricity on the farm.

And what happened—well, slowly were added other new tools—lime for the impoverished fields, a gas engine to grind out the laundry, later a tractor, etc.

Now, unfortunately, this story has a break in it—the farm had to be sold, and why? For two principal reasons and not the reasons you may think—not because money was spent for new gadgets, not because of a depression (and we had one in 1907), not because of the drought of 1910 and 1911, and not because the boys wouldn't stay on the farm—the reasons were: a dirt road and no electric service, and no apparent chance to do away with one and add the other.

But another farm was bought right away on a hard road and with electric service available, and that farm goes ahead today, and we have had depressions, water shortages, floods, pests, and electric bills. The electric bills at this new location exceed $4,000 for the past ten year period. In 1933, you may remember that year, it exceeded $350.00.

Now, this is a *personal story* told to you because it is the one I know best, it has meant the most to me. I didn't get it second-hand, nor have to take time to look up and check the facts. There are thousands and thousands like it right among your own farmers. You don't realize it, and the farmers themselves don't realize it, but they are there.

But what is more important to you is the fact that there are still many more thousands of stories just like it yet to be written, and the utility men, you men right here, have the golden opportunity *right now, this year,* to start this ball a-rolling. Running water—water under pressure!

It means more money to these farmers; more milk per cow, more eggs per hen, more apples per tree, more beef per steer, more strawberries, raspberries, lemons and limes (where's Jack Benny). And what does money mean to a farmer. No class of our people spends money as freely as farmers. They are reckless spendthrifts! But they are spendthrifts of money they have in their sock and not of money some slick salesman tells them they may possibly have in their sock some day and they have certain very definite ideas about how they will spend it. They simply will not hitch the cart before the horse. In their minds, an electric range, or even an additional bridge lamp, before they have water under pressure puts the cart *decidedly* before the horse, and you know this is right thinking. You can't be sold a $300 living room rug when your kitchen needs linoleum, and no "hurrah boys" campaign sponsored by the cleverest sales executive in this room can sell right-thinking farmers electric cooking, student lamps, or toasters until the "Chick Sale" is on the wood pile and the cows no longer drink in the creek.

Many of you here in this room agree with this and are close enough to farm problems in your territories to know how to put the wheels in motion to place your companies squarely and actively behind a campaign to start a farm modernization movement rolling by pushing the sale of pumps, and those of you who do not know the problem, have men in your organization who do.

Now on my farm, which is not a large one, we keep 20 cows, 400 to 500 hens, and grow crops to feed them, and some to sell. With our modern equipment one man does nearly all the work. But suppose we take away the water system? —What then? It would take five hours every day, including Sundays, just to pump and carry the water—35 hours a week. That is a whole week's work in some minds. But suppose it is only a half a week's work—these farm men cost, with privileges, about $20.00 a week. That's $10.00 a week to pump and carry water! $40.00 a month! And $40.00 a month per farm will buy the complete electrical equipment for every farm in your territory.

But that isn't all. That is only a small item. My cows give 15% more milk because they have water in the barn, and the hens lay more eggs with water always before them. I don't know so much about hogs and beef, but com-

(*Continued on page* 183)

Value and Characteristics of Electric Cooking, Water Heating and Refrigeration Loads

By R. R. Herrmann
Northern States Power Company, Minneapolis

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

IN the following discussion concerning the value and characteristics of the range, refrigerator and water heating loads, all reference to rate levels necessary to secure and hold the business, and the value of service to the customer, will be omitted since this has been discussed pro and con for some time. Is it not sufficient to assume that if customers purchase equipment and continue to pay their bills on the existing schedules that they feel the value of the service to them is sufficient to warrant their paying the price?

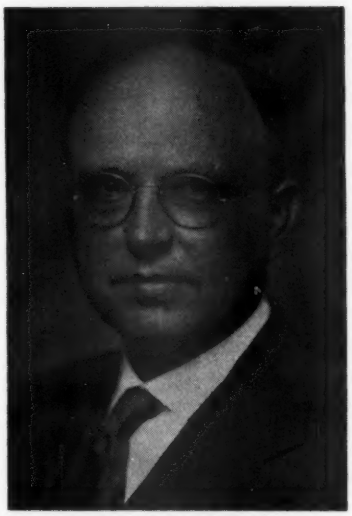
In discussing the value of service from the utility standpoint, it is of course necessary to know how much should be spent to secure this business and the cost of serving it after it has been secured. The cost is of course made up of a number of factors with which all of us are more or less familiar, such as fixed and operating expenses. In order to find what amount should be spent to secure this business some figures representative of the cost should be determined and then knowing the return from the business, the amount to spend in order to secure it can be decided. The first cost which we might consider is the incremental cost necessary to place the system in condition to supply the service. That is, what expenditure must be made in the distribution system to supply ranges and water heaters. A modern refrigerator need not be considered at this time because records show that only in rare instances is it necessary to change the existing distribution system because of the small load and good load factor under which refrigerators operate.

In Table I are shown the costs incurred for three conditions:

(1) for serving a range and water heater
(2) for serving a range only, and
(3) for serving a water heater only.

The data are segregated into three divisions, namely,

(a) those installations requiring only a meter and clock control
(b) those requiring changes in the distribution system as well as in meter and clock control, and



MR. HERRMANN

(c) those requiring new services as well as meter and clock control.

In the first of these shown under (a) the expense of connecting a range was slightly less than $4.00 during the year 1934. If, however, the connecting of a range involved the changing of the distribution system the expense was almost $120 and in the third instance the expense was less than $13. Looking at the over-all picture the average cost of connecting a range was slightly over $32. These figures do not include the expense of changing feeders or substations.

Inasmuch as the water heater schedule of the Northern States Power Company requires in each instance a meter and clock control, the three corresponding figures to those just recited in the case of ranges are $32, somewhat over $74, slightly less than $39, with an average for the total number connected of over $34. The water heating service under the Northern States Power Company schedules requires 220 volts, which means that in those instances where distribution systems were changed and service wires installed, it was because the former installation was for 115 volts, necessitating the running of a third wire. Since 1935 the cost of water heater installations have been lessened because of the adoption of combination meters and clock switches which is cheaper than purchasing two individual instruments separately.

Table II shows the estimated costs of extensions to new customers during the four year period beginning with 1930, in the suburban area adjacent to a large city. The average expense of connecting a customer for lighting only was slightly less than $71 while the average expense of connecting a new customer who installed a range was slightly less than $191—a difference of $120. In the third column is shown the average cost of providing capacity for range service for an existing customer, this figure averaging about $115, which is only slightly less than $120. The greater expense in this area over that shown in Table II is to be expected because in suburban areas where customers are more or less scattered, there are a great many instances where only one or two customers are served from the same transformer and the installation of ranges requires the replacing of many more small transformers with larger ones than would obtain in urban areas. In addition, the ranges were purchased by the new customers in those cases requiring extensions of more than average length in order to secure the service, since the additional revenue from the ranges contributed toward the allowable investment in the extension according to the extension rules.

In Table III are shown the results in a small town in Minnesota covering a considerable period of time. In 1925 the distribution system in this small town was revamped to make it possible to take on a moderate amount of range load, the expense of revamping amounting to approximately $1,800. Immediately after this revamping of the distribution system, ranges were connected making the cost per range up to that time $163.50. You will notice from

TABLE I—RANGES AND WATER HEATER INSTALLATION COSTS—EXISTING CUSTOMERS
(EXCLUSIVE OF INTERIOR WIRING)
1934

	Installations		Total Cost	Average Cost
		%		
A. Installations requiring no changes except meter and clock control:				
(1) Combination range and water heater..	22	16.1	$ 770.34	$ 35.02
(2) Range only	517	25.8	2,056.11	3.98
(3) Water heater only	1067	73.9	34,280.00	32.13
B. Installations requiring changes in distribution system as well as meters and clock control:				
(1) Combination range and water heater..	37	27.0	4,555.23	123.11
(2) Range only	408	20.4	48,840.49	119.71
(3) Water heater only	22	1.5	1,636.45	74.38
C. Installations requiring new service wires, meters and clock control:				
(1) Combination range and water heater..	78	56.9	3,767.86	48.31
(2) Range only	1076	53.8	13,366.03	12.42
(3) Water heater only	355	24.6	13,740.64	38.71
D. Total of above:				
(1) Combination range and water heater..	137	100.0	9,093.43	66.38
(2) Range only	2001	100.0	64,262.63	32.12
(3) Water heater only	1444	100.0	49,657.09	34.39

TABLE II—AVERAGE COST OF RESIDENTIAL EXTENSIONS—SUBURBAN TERRITORY

Year	New Customers				Old Customers	
	Lighting Only		Both Lighting and Range		Range Additions	
	No.	Cost	No.	Cost	No.	Cost
1930	91	$ 6,026	57	$ 9,501	32	$4,340
1931	137	10,625	66	12,878	20	2,334
1932	136	9,250	75	15,769	17	1,539
1933	86	5,949	44	8,031	15	1,408
Total	450	31,850	242	46,179	84	9,621
Average Cost per Customer		$ 70.77		$190.82		$114.53

TABLE III

Year	Number of Customers	Ranges	Per Cent Saturation	Additional Construction end of year	Per Add. Ranges
1925	112	4	3.6	none	
1926	110	15	13.6	$1,798	$163.50
1927	109	22	20.2	1,980	116.50
1928	112	27	24.1	1,980	86.00
1929	117	29	24.8	2,194	87.70
1930	122	30	24.6	2,198	84.50
1931	122	30	24.6	2,198	84.50
1932	117	31	26.5	2,257	80.50
1933	118	32	27.1	2,261	80.70
1934	114	35	30.7	2,285	73.70
1935	120	36	30.0	2,287	71.50
1936	125	38	30.4	2,640	77.60
1937	132	48	36.4	2,974	67.50

the table that each year following additional ranges were installed causing some additional expense but up to and including last year the expense per range averages only $67.50.

From the preceding information one is led to believe that on the average the allowance for changes in distribution systems necessary per range is somewhere between $32.12 and $67.50. Some one may criticize this figure by stating that the range should be really charged up with more than this amount because the management, in anticipation of serving ranges in the future, has constructed the distribution systems much heavier than would otherwise be the case. Installations of distribution systems and other equipment are made not only to take care of loads existing at the moment but also what may reasonably be expected within the not too distant future, and having made this expenditure it seems reasonable that every effort should be made to utilize the same as quickly as possible, otherwise one might consider the utility as having over-built far in excess of immediately anticipated requirements. These figures of $32.12 to $67.50 per range on the average do not include any expense back of the distribution system such as might be necessary in substations, strengthening of feeders from substation to certain districts and also the additional expense between the substation and powerplants.

The additional expense necessary to increase the capacity of substations, feeders and transmission systems as well as power plants is of course dependent upon the number of ranges served by each. There is no question about the power plant supplying all of the ranges served, and substations supplying the ranges served by the distribution system connected to such substation. The cost analyst is therefore confronted with the determination of the average demand of a group of ranges, starting with the smallest community on the system. It is known that the diversity between range demands is quite large and that in almost every instance a three or five kw transformer will handle a single range. Figures have been published in the past showing the relationship between the size of transformer and number of ranges served. When it comes to the demand of a group of ranges on the substation, or, carrying the thought further, on the power plants, the determination of this amount is not so easy. Chart No. 1 shows two systems of load curves for the peak load day in December, 1935, on a portion of the system of the Northern States Power Company. One curve shows the demand on the substation caused by a residential district having a high saturation of ranges and water heaters and the other a load curve of a residential district having a very low saturation. There is a relatively high peak demand between 5 and 6 o'clock P.M. and this peak does not exist in the curve of the district having a low range saturation. By taking the difference between this peak occurring at 5:30 and demand occurring at 6:30 when it may be assumed that the ranges are out of use, there is a difference of 206 kw. In this particular district at the time of this load there were 170 ranges being served and no water heaters (the clock

switch disconnects the water heaters between 4 and 7 P.M.) so that the average additional demand of all of the other uses including that of the range at this time did not exceed 1.2 kw per range. However, if a deduction is made for additional equipment in these homes such as might be caused by the refrigerators in use, this average demand of 1.2 kw should be reduced somewhat.

Chart No. 2 compares the load of this district in December, 1926, with the load in December, 1935, and Table IV shows the essential features of this district at these two times. The percentage range saturation dropped from 84 to 41. Due to the water heaters and other uses the load factor of this district increased materially during this 10-year period, as shown in Table V. But, the additional demand caused by the range load averaged about the same in 1926 as in 1935.

In order to get some inkling as to what would be the case if a large community of over 10,000 people did all of their cooking by means of electricity, a load curve based on the gas sendout in such community has been prepared. In Chart No. 3 are shown three load curves. First, the load curve of the electric system shown by the vertical black lines; second, the load curve of the gas system converted to kilowatts, and the third or upper which is the sum of the two below. The problem was to find out what the electrical load characteristics of this city would be if all gas ranges were replaced with electric and of course under these conditions it was necessary to use a conversion factor. In converting it was assumed that 100 kwhr of electricity are the practical equivalent of one MCF of gas. This figure is

TABLE IV

	1926	1936
Average Number of Customers	76	405
Number of Ranges	64 (84%)	168 (41%)
Number of Water Heaters	0	130 (32%)
Average Monthly Use	176 kwhr	342 kwhr
Excluding Water Heating	176 kwhr	219 kwhr
Maximum Demand	93.6 kw	579 kw
Residences only*	82.6 "	537 "
Average kw per residence	1.09 "	1.32 "
Transformer Capacity (distr.)	240 kv-a	562 kv-a
Distribution System Loss	14.3%	6.8%

*Deductions for street lighting and water pumping have been made.

TABLE V—COUNTRY CLUB DISTRICT
DECEMBER 1926 AND 1935

	1926	1936
Number of Customers:		
Residential	113	407
Water Heating	.....	132
Commercial Lighting	1	13
Power	1	8
Street Lighting	1	1
Ranges	89	170
Kwhr Input (Feeder)	35,880	196,690
Kwhr Sales	27,122	191,834
Residential	21,894	119,585
Water Heating	.....	55,198
Commercial Lighting	785	3,298
Power	414	9,416
Street Lighting	3,973	4,337
Miscellaneous	56	.....
Maximum Demand-kw input	168	579
Monthly Load Factor-input	28.7%	45.6%
Monthly Load Factor—Sales	21.7%	44.5%
Without Water Heater (Sales)	.....	31.7%

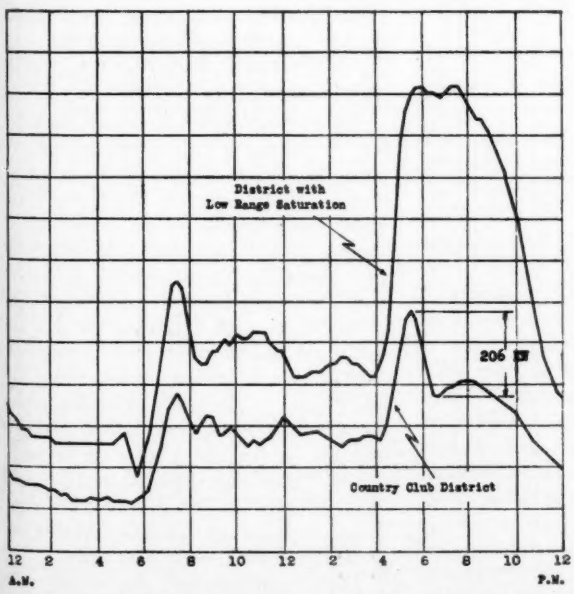


Chart I—Load Curve of Country Club District Compared With District Having Low Range Saturation Tuesday, December 17, 1935

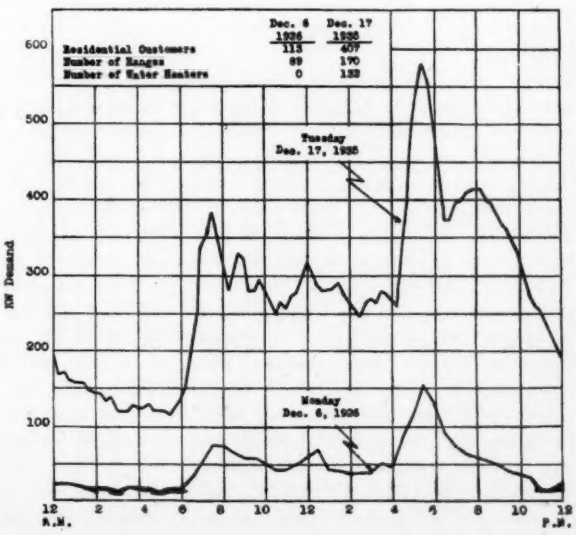


Chart II—Load Curves of Country Club District Increase in Nine Year Period

TABLE VI—GAS AND ELECTRIC OUTPUT STATISTICS

Day, 1936	Maximum Kw	Time	Kwhr Output	Daily Load Factor
	Electric Data			
Mon., Oct. 19	2540	8:30 A.M.	38,270	62.8%
Tues., Oct. 20	3060	9:30 A.M.	42,820	58.3%
Thur., Nov. 26	1920	8:00 P.M.	24,570	53.3%
Tues., Dec. 22	2990	5:30 P.M.	38,770	54.0%
	Gas Data			
	Maximum Hourly MCF Sendout		MCF Sendout	
Mon., Oct. 19	29	7– 9 A.M. 5– 6 P.M.	270.5	38.9%
Tues., Oct. 20	31	11–12 A.M.	248.3	33.4%
Thur., Nov. 26	35	11–12 A.M.	256.7	30.6%
Tues., Dec. 22	23	11–12 A.M.	228.0	41.3%
	Resultant Data with Electric Plant Serving Combined Load			
	Maximum Kw Demand Combined Load		Equivalent Kwhr*	
Mon., Oct. 19	5440	8:30 A.M.	65,320	50.0%
Tues., Oct. 20	5700	11:30 A.M.	67,650	49.5%
Thur., Nov. 26	4495	11:30 A.M.	50,240	46.6%
Tues., Dec. 22	4990	5:30 P.M.	61,570	51.4%

*Conversion factor 100 kwhr equivalent to 1 MCF.

TABLE VII—ADDITIONAL DEMAND IF ALL CUSTOMERS USED ELECTRICITY INSTEAD OF GAS

Day, 1936	Electric Demand	Equivalent Combined	Additional Demand	No. of Customers	Additional per Customer
Mon., Oct. 19	2540 kw	5440 kw	2900 kw	3138	.92
Tues., Oct. 20	3060	5700	2640	3138	.84
Thur., Nov. 26	1920	4495	2575	3000	.86
Tues., Dec. 22	2990	4990	2000	3138	.64

Based on 1 MCF of gas being equivalent to 100 kilowatt-hours. Assuming twice the B.t.u. when gas is used for cooking and 17% loss for electric and 7% loss for gas.

based on the assumption that it would take about one-half as many B.t.u. of electricity to do the same work as gas. This study was made on Thanksgiving Day in 1936 because investigations disclosed that on that day there was very little gas being used by commercial and industrial establishments so that the load of the gas plant would reveal to a very large degree the domestic cooking load. Of course this is affected to a certain degree by the gas water heating load during this day, but the effect of this is rather small since there were not many storage type gas water heaters in use and very little other activity outside of those associated with Thanksgiving Day, taking place. The load of 3,500 kw between 11 and 12 A.M. would be caused by 3,000 ranges, thus giving slightly less than 1.2 kw per range.

In Table VI is shown in tabular form the results based on four days' equivalent loads, load factor, etc., showing a better load factor on the electric system than on the gas. Table VII indicates that the demand in excess of that of the electric load which would be imposed if all customers using gas were converted to electric would be somewhere between .64 and .92 kw per range. In other words, if the number of ranges served in a town of this size increases from year to year, the average additional load imposed on the substation per range would be, let us say, not in excess of .92 kw. These figures necessarily are approximate and dependent upon the conversion factor chosen.

The periods of cut-off of water heaters must be determined from two angles, viz.: the summer and winter peaks of both the substation and system loads. Chart No. 4 shows the system and feeder load curves on the peak day of the system load in the winter. Since the peak in this instance occurred at 5:30 P.M. in both, disconnecting water heaters over this period eliminates increasing both generation and transmission as well as feeder capacities for water heating service. Chart No. 5 shows similar load curves for a system summer peak day. Disconnecting the water heaters from 10 to 12 A.M. likewise eliminates using generation and transmission capacity for this purpose. The flexibility of the water heating schedule permits the changing of the cut-off periods to meet the situation of changing load curves, not only for the system but for any portion thereof.

The maximum heating element to be used is determined by the excess permitted when each range customer is also a water heating customer. With this assumption the heating element of the water heater should not exceed the additional capacity caused by the range in any part of the system. If the distribution feeder must provide for 1.2 additional kw for a range the water heating element should not exceed 1.2 kw. Furthermore, the energy to be delivered to each water heater must be sufficient to supply the hot water requirements of the customer, thus limiting the hours of cut-off. Fortunately the difference between morning and evening peaks, and the duration of the same, permit a one kw water heater for each range with a permissible charging period of 19 hours out of every 24 thus permitting the supply of 570 kwhr—more than enough for the average family.

The demand for water must then be met by having a tank large enough to meet the customer's maximum requirements and still permit a full tank of water to be heated during the available heating period each day. Assuming a 100 degree rise in temperature, one kw will heat four gallons of water each hour so that a customer emptying his tank of hot water in the evening can expect to have at least 48 gallons of hot water 12 hours later. The old expression "the proof of the pudding is in the eating" may be applied here since it is well known that 50 gallon tanks each equipped with a one kw heater, are rendering satisfactory residence service in all except an extremely few cases.

These conditons lead one to the following conclusions:

1. Additional expense in changing distribution systems to accommodate electric ranges

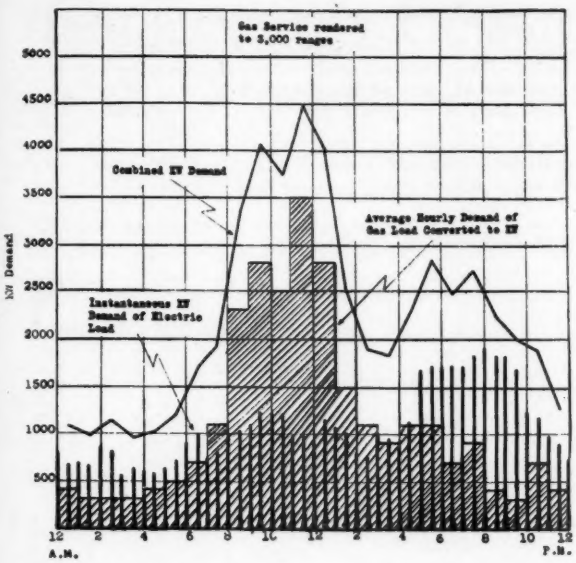

Gas Service rendered to 3,000 ranges
Combined KW Demand
Average Hourly Demand of Gas Load Converted to KW
Instantaneous KW Demand of Electric Load
KW Demand
A.M.
P.M.

Chart III—Combined Electric and Gas Load Curve. Thursday, November 26, 1936 (Thanksgiving Day)

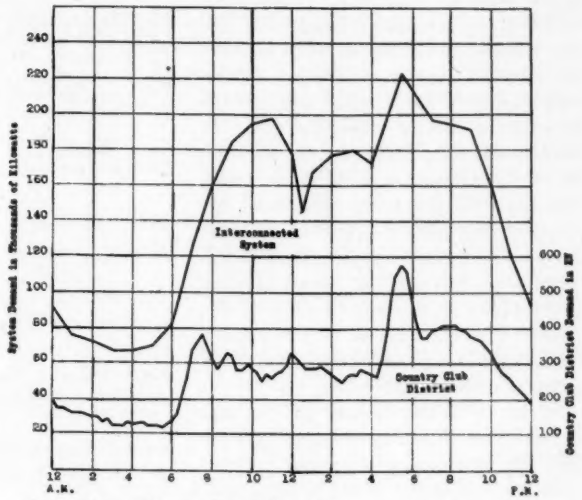


Chart IV—Winter Daily Load Curves. Tuesday, December 17, 1935

will not exceed $67.50 per range on the average, and may be considerably less on large systems, probably less than half of this amount.

2. The additional demand on feeders supplying a residential area caused by ranges will not exceed 1.2 kw and will probably be in the neighborhood of 1 kw.

3. The coincident demand of ranges on a substation serving a rather large community will be in the neighborhood of .8 kw.

4. Properly controlled storage water heating service will add little if anything to the peak load of either substation or feeders.

5. The additional distribution expense caused by water heaters should not exceed $30 per water heater on the average.

With the assumptions above, it is possible to estimate the cost of supplying ranges and this has been done and is shown in Table VIII. In determining these costs no investment in generating and transmission facilities is shown. The reason for not doing this is because it is rather uncertain as to what the incremental expenses are in transmission facilities and instead of doing this published schedules of companies of large primary, or rather 2,300 volt, combined light and power service have been used. A check of rate schedules shows that the end blocks of both demand and energy schedules for 2,300 volt service are as low as $1.00 per kw and in some instances lower than this, and the end block of the energy charge of these rates varies all the way from three mills upward to over 1c. Inasmuch as companies use these large power schedules we shall assume that they are not losing money from the incremental business obtained therefrom. Since the schedules are de-

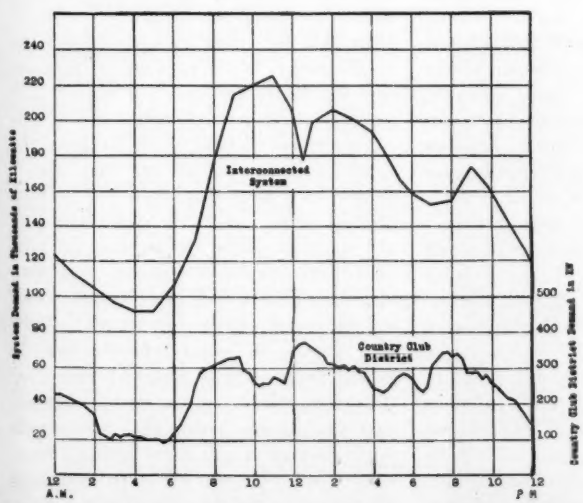


Chart V—Summer Daily Load Curves. Tuesday, July 14, 1936

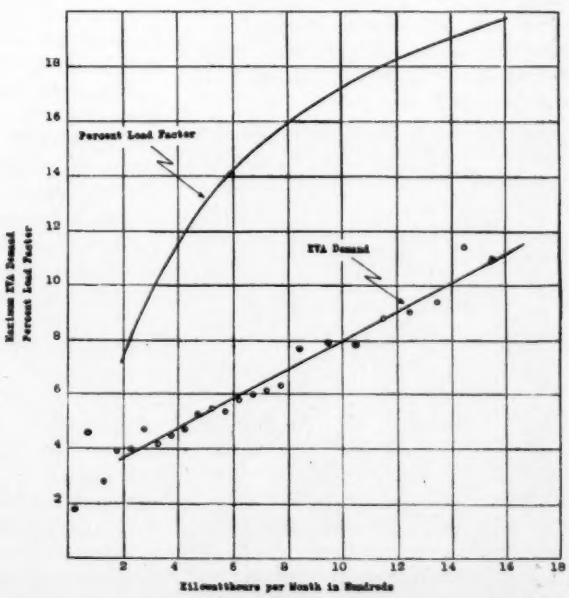


Chart VI—Relationship Between Demand and Monthly Kwhr Consumption, Individual Residences (Exclusive of Water Heating)

signed for 2,300 volt service it means the practical elimination from our study of the cost of substation, transmission facilities and generating equipment. All that remains to be considered is whether the schedules represent the true incremental service for ranges, whether the incremental service does not cost the utilities less than $1.00 per kw with, let us say, an average of 6 mills per kwhr, and since we know the additional expense in enlarging distribution facilities the elements entering into incremental expense of serving the range business are estimated to be those shown in Table VIII. The average use of 1,300 kwhr is predicated on an analysis of sample accounts shown in Table IX.

As far as water heaters go, the cost of transmission and generation facilities does not enter the picture and all that needs be considered is the energy cost. The elements entering into this are shown in Table X. All water heating is served through a separate meter, thus permitting the determination of the average use accurately. The average use of almost 7500 water heating customers during 1936 was 2,780 kwhr annually, varying from an average of 3,410 in Minneapolis to 2,600 elsewhere.

One may ask "what relationship will there be in the future between the demand of a residence customer and his average monthly use?" Chart No. 6 shows this relationship. If the past use by a few large users is indicative of the future, this chart shows that the load factor exclusive of water heating improves with increased use approaching a value of close to 27 per cent. When off-peak water heating is included the load factor will be greater.

The amount by which generation and transmission capacity must be increased —as stated before—is difficult to determine and is different for different companies. The shorter working day may result in an annual peak load on the power station occurring in the morning or early afternoon in which case the evening peak caused by ranges will be little, if any, larger than the morning peak. Also, the location of the property with respect to the time zone has its effect on both the time of occurrence and the extent of the peak load. Turning on of lights is governed by the sun whereas meal time is governed by the clock so that one may assume a lesser combined peak in those cases where utility systems extend from east to west than in those systems extending from north to south. Also, a utility serving both large urban centers and small rural communities should have greater diversity between range peaks because of the difference in habits of the people.

TABLE VIII—ADDITIONAL EXPENSE IN SUPPLYING RANGE SERVICE

(1) Fixed Charges on $32.00 or $67.50—Interest 6%, Depreciation 2.4%, Taxes 2%	$ 3.33	or	$ 7.02
(2) Demand Charge—1 kw	12.00		12.00
(3) Energy Charge 1300 kwhr @ 6 mills plus 10% loss	8.58		8.58
(4) Operation and Maintenance on distribution system 3%	.96	or	2.03
(5) Extra meter reading and billing expense (none)	.....		.....
Total	$24.87		$29.63
(6) Cost per kwhr sold (incremental)	1.91¢		2.28¢

TABLE IX—COMPARISON OF USAGE BEFORE AND AFTER INSTALLATION OF RANGE

	Kwhr	Revenue	Average Rate
28 Customers			
Before Range was installed	1,136	$33.01	2.91¢
After Range was installed	2,291	60.26	2.63
Increased Usage	1,155	27.25	2.29
37 Customers			
Before Range was installed	1,191	39.72	3.34
After Range was installed	2,531	69.91	2.76
Increased Usage	1,340	30.19	2.25
Total—65 Customers			
Before Range was installed	1,167	39.43	3.38
After Range was installed	2,428	68.03	2.80
Increased Usage	1,261	28.60	2.27

TABLE X—ADDITIONAL EXPENSE OF WATER HEATER SERVICE

(1) Fixed Charge on $30.00 (10.4%)	$ 3.12
(2) Demand Charge	.....
(3) Energy Charge 2800 kwhr @ 6 mills plus 5% loss	17.64
(4) Operation and Maintenance @ 3%	.90
(5) Extra meter reading and billing expense	2.50
Total	24.16
(6) Cost per kwhr sold (incremental)	.86¢

The profitableness of this business depends of course upon the amount of revenue obtained therefrom and here again one is confronted with difficulty in the determination. Why, for example, should the revenue from any particular appliance be based on a particular block of the rate schedule? An all purpose rate schedule consists of several blocks of energy at various prices so that a customer using a considerable amount of energy will obtain a lower average rate than a customer using only a moderate amount. The usual procedure in the past has been to assume a certain consumption of electricity for ordinary uses such as that for supplying lighting and appliances, and then to assume that the next piece of equipment bought by the customer will be supplied on the rate schedule beginning at the point reached by the previous consumption. This appears logical and if so the revenue obtained from any particular appliance depends upon the previous consumption. Since customers are not apt to purchase appliances in a specific order, it appears that a method of this nature is not as satisfactory as it should be. This leaves then only one other way to consider the problem and that is consider it from the over-all viewpoint and not try to pick out any particular appliance and ascribe to it certain earnings. This must be modified somewhat by the fact that a device such as a range will not be purchased unless the expense of operating the range is within the amount the purchaser considers fair and this reasoning therefore leads us to place an upper limit on the energy charge for energy used by the range. As long as the revenue obtained from a range under average conditions is more than the basis incremental cost figures previously determined, which of course will differ for each company, there is some profit in obtaining the business. In the case of water heating, the schedule of the Northern States

(*Continued on page* 170)

Manufacturer's Present Findings on the Modern Kitchen Bureau

By C. E. Swartzbaugh

Chairman, Business Development Committee, NEMA

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

THE Modern Kitchen Bureau Program is perhaps the most unusual co-operative sales promotion activity as yet developed in the Electrical Industry.

This unreserved statement casts no aspersions on, nor belittles any of the other very fine Promotional Programs currently operating, but, the Modern Kitchen Program just doesn't happen to have any previous parallel of which I know.

Perhaps no other Industry you can think of is quite so complex as that in which we all work and make our living. While each of its four major branches perform a separate, distinct and necessary function, they are so interdependent that it requires the services of all of them before the Public can secure the *full* benefits of COMPLETE electric service. Naturally, therefore, any joint co-operative activity presents many problems.

In this particular activity, this overall complexity is still further complicated by the differences in viewpoint of manufacturers, due to the variety of products involved and the differing viewpoints among Utilities, resulting from the production by some of them of competing types of fuel.

In the face of such difficulties, the development, in the short two years since its inception, of a comprehensive and successful co-operative Sales Promotional activity having the approval and support of ALL branches of the Electrical Industry is, to my mind, an accomplishment worthy of more than passing note.

For, as it starts its third year of operation, the Modern Kitchen Bureau Program is an accomplished success. It has already proven itself one of, if not THE most all inclusive, comprehensive and helpful sales stimulant our Industry has had. It has been of distinct benefit and profit to ALL branches of the Electrical Industry.

Ingeniously combining, as it does, Public Education as regards the Kitchen of the future with the accepted Electrical Products and Services of today, the Program has attracted to it the most widespread interest and support.

The Program has been, and is now, presenting the desirability and need of Household Electric Servants to the consuming Public more directly and more forcefully than any previous co-operative activity in the Industry. It has unquestionably been a plus factor for two years in the Refrigerator, Range and Water Heater market.

The expanded Program for 1938 calls for an expenditure of Three Hundred Fifty-five Thousand Dollars on the part of the co-operating NEMA group of manufacturers, supplemented by hundreds of thousands more which these manufacturers will spend in individually advertising and promoting their own specific products.

This is "important" money in most anyone's language and as these contributors are admittedly not altruists, it means they thoroughly believe in the operating procedure of the Executive Committee —have confidence in its Chairman and are sold on the specific Program developed.

Now, because of my remote personal interest in the products this Program is primarily designed to sell, perhaps I am in position to say several things no one else could make—

FIRST—I submit to you that—Other things being equal, it is good business for Utility Commercial Men either to give preferred consideration to the products of NEMA members in general, and those manufacturers who are contributing to the support of this Program in particular, or in case other things are *not* equal, to suggest to your favored supplier that he really ought to join NEMA and help row the boat.

SECOND—May I just for a moment forget my personal connection with the development of the Modern Kitchen Bureau and express this considered opinion—

To my mind, the Electrical Industry owes an eternal debt of gratitude to those Utility men and manufacturers, who, meeting together, resolved their differences of opinion and diverging viewpoints and who, through co-operation, developed the splendid operating formula for the conduct of this joint Sales Promotional activity.

It is a tribute to the patience, determination and ability of the men on the Executive Committee in general and of Chairman Whitwell in particular, that out of these deliberations there came something so constructive as the Program we are discussing.

The splendid operating formula for the conduct of the Modern Kitchen Bureau may well serve as a model for similar future Industry Sales Promotion activities.

NEMA and its members are wholeheartedly supporting this Program and look with confidence to its continuing success.

The Evolution of Lighting

A 14' x 7' painting depicting the transition of artificial lighting from primitive to modern times—Courtesy Colonial Premier Co.

This Era of Dealer Cooperation

By S. P. Vecker
Carolina Power & Light Co., Raleigh, N. C.

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

MANY of us remember the early propounders of Dealer-Utility Cooperation and perhaps recall the skepticism with which we looked upon such a doctrine. We were faced with the *necessity of paying higher taxes* and selling electric service *at lower rates*—while all other commodities *were increasing* in price; and, mind you, while these things were taking place, economic conditions in general became even more uncertain, forcing us to seek some plan of relief.

The slogan, "Sell Your Way Out of the Depression," which had been used by other industries with marked success, *could be adopted by the utilities provided the cost of mass selling to the mass market was not beyond their solvent strength.* Hence, these early propounders of Dealer-Utility Cooperation were given a receptive ear, and I, numbering myself as one of the first crusaders of the "cause" for such cooperation, feel grateful for this happy privilege of discussing before this sales conference a subject in which I am so deeply interested.

While I speak as a representative of a utility whose operations are limited in scope as compared with those of many companies represented here today, *it safely may be said, regardless of the size or geographic location, we are confronted with a common requirement of selling more electric service at the minimum cost to more customers.* Assuming this to be true, it may be stated further that economics of sound utility operations exist ONLY IF in the sale of more electric service at the minimum cost to the consumer, it is ALSO accomplished at the minimum cost to the utility.

Despite the claims made by adroit government theorists that rate reductions ALONE will solve our problem, a careful survey of past experience proves definitely that increased kilowatt hour sales may be secured ONLY through selling INCREASED USE. Regardless of the cheapness of cost of electric service, kilowatt hour gains will not come without the customer's first having purchased the required electrical equipment. Since this calls for a capital investment by the customer, the important step in

MR. VECKER

the solution of this problem lies in CO-ORDINATED SELLING . . . selling electrical merchandise on a larger scale than ever before . . . selling electrical merchandise to a greater percentage of customers . . . in fact, mass selling to a mass market so that *the low-use customers as well as the larger domestic users* will be included in this sales objective. Advertising—no matter how skillfully prepared—will not do this job; and the cleverest sales promotion methods are inadequate to the task. *Mass selling is a matter of mass man power;* it is knocking on more doors by more men, well-trained salesmen who create USE by placing *more* electric merchandise in the homes. It is the constant pounding away at customer sales resistance through continuous customer contact by salesmen backed by never-ending educational sales promotion work—through advertisements, displays, radio, direct-mail, and other media that *enable us to reach our objective of selling more and MORE electric service.*

With rare exceptions, every utility has, heretofore, depended entirely upon its own sales organization to sell and to supply the needs for electrical appliances, and the policies and the methods were so designed as to carry out such plans—DUE

1. to the then existing need to pioneer new equipment and develop its public acceptance, and
2. to prove to Dealer outlets that a mass market—with its mass profits—did exist for them.

However, previous records revealed that increased use each year was *too limited in volume* to absorb *the losses in revenue* which would inevitably accrue as a result of drastic rate reductions. *Again,* the solution to the problem pointed to mass selling to the mass market.

In order to determine whether or not mass selling to the mass market is economically feasible when using a single-handed method—that is, merchandising through the efforts of the utility's own sales force ALONE—these EIGHT QUESTIONS must first be answered:

1. Are the leading appliance manufacturers and distributors securing adequate sales volume in the territory to justify the expenditure of funds necessary to carry on effectively an advertising, sales promotion, and direct selling program?
2. Is it feasible for the utility ALONE to make available to its present and prospective customers sufficient different brands of electrical appliances so as to receive the full benefit of national advertising?
3. Is the utility's appropriation for advertising ample and is its sales promotion program ALONE extensive enough to reach effectively all classes of the masses?
4. Can the utility ALONE have salesroom displays adequate in number to serve best all prospective buyers existing in the mass market?
5. Is it economically feasible for the utility ALONE to increase its sales personnel to a sufficient size wherein all potential mass-market buyers will be approached periodically?
6. Is it conducive to *good* public relations for the utility ALONE to employ sales methods which deprive its customers of their *merchandise brand preference*?
7. Is it sound business for the utility *whose sole objective is to sell electric energy and whose first obligation is to serve the public,* ALONE to assume additional risks and obligations by *financing* and *servicing* all electrical appliances sold in its territory?
8. And, finally, *is the cost* of securing added business through this single-handed merchandise sales method justifiable?

If one thousand such questions were asked, it would be appropriate to apply that trite expression, "A thousand times

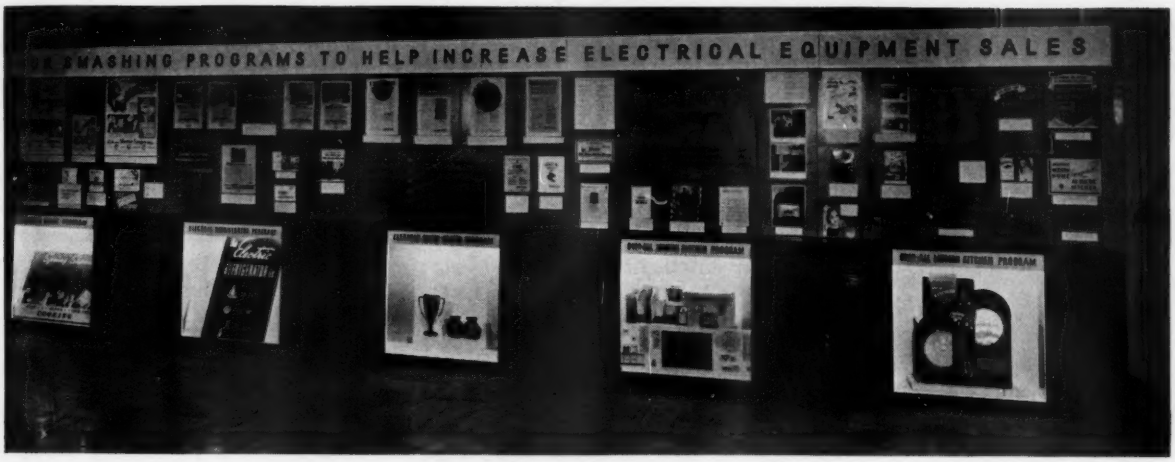


Exhibit of Modern Kitchen Bureau Promotional Material

NO." Such questions will arise when any utility, employing the single-handed sales method, approaches manufacturers and distributors with a view of formulating a cooperative plan to sell more service to more customers. *Every utility represented here this morning is primarily interested in securing the maximum sales results at the minimum cost,* and, therefore, *shares the same interest in seeking the answers to these questions.*

With your permission, I refer to my Company in the Carolinas. It was there I had the opportunity to witness both selling methods—there the mass selling problem was solved.

The records show that during the three years previous to the installation of a Dealer-Utility Cooperation Program the Company's average annual kilowatt hour consumption per residential customer *increased 4 per cent*—that of the Nation *increased 5 per cent*—and the Company's average annual kilowatt hour consumption per residential customer was *THEN 8 per cent higher* than the national average.

Three years ago a drastic rate reduction was made effective, and the Management fully realized that the *anticipated loss in revenue could not possibly be recaptured unless more customers were sold greater increases in use.*

A survey of the territory served revealed that there were scarcely any dealers through which electrical appliances could be purchased, and, furthermore, there was no apparent interest among merchants in the sale of such class of merchandise. The Company at that time represented two of the leading major appliance manufacturers through exclusive franchises, and approximately 80 per cent of all major appliance sales were made through the Company, involving *only these two products.* Other well-known manufacturers making nationally-advertised products *had no sales outlets* whatsoever in the territory. *Valuable sales aids* available from distributors *other than* those supplying the Company's needs, *could not be, and so were not being, utilized.* In fact, the potential business to be secured through dealers was too lean to justify sales help from the other manufacturers and distributors.

Dealers, prospective dealers, manufacturers, and distributors, were approached in order to determine from their viewpoint those requirements necessary to formulate a program which would enlist their selling efforts. The results of these conferences provided the Company with that type of information needed in creating a policy which would be most acceptable to all sales allies. Needless to say, the fundamental principles involving advertising, sales promotion, salesmen's compensation, and other sales practices so prevalent in operating the single-handed merchandising method, were entirely discarded, and the Company for the first time embarked upon a sales program designed to sell increased use to the masses—employing the MASS MAN POWER of Dealers, Distributors, Manufacturers, and Utility.

The proof of the pudding is in the eating, and I submit facts which furnish the answers to the EIGHT QUESTIONS which I raised but a moment ago concerning the soundness of a Dealer-Utility Cooperation Program.

During the past three years which embrace the era of Dealer-Utility Cooperation of my Company, the following accomplishments have been attained:

1. The number of major appliance dealers *has quintupled.*
2. The dollar volume in electrical merchandise sold through these allies *has increased ten-fold.*
3. The average annual kilowatt hour consumption per residential customer *has increased 71 per cent*—that of the Nation *increased 28 per cent*—and the Company's average annual kilowatt hour consumption per residential customer *is NOW 44 per cent higher* than the national average.
4. The Company's merchandise capital-in-use, involving moneys invested in stock and accounts receivable, *has been reduced 46 per cent.*

Lest the impression be gained that these results represent nothing more than a case of "robbing Peter to pay Paul," let me especially stress the fact that during the three-year period under review (1935-1937) the combined merchandise sales of Company and Dealers *increased 249 per cent.* By the same token, the cost of securing each dollar of new domestic revenue has shown a steady decline during the three-year period—that of 1937 being *43 per cent less* than that of 1936.

These results have been secured through aggressive promotional selling on the part of the utility, active merchandise participation on the part of the dealers, backed up by adequate advertising, planned sales promotion, massed man power, and the help of a greatly increased number of manufacturers and

distributors. Furthermore, these results were attained *without resorting to cash concessions or sales subsidies of any kind,* such as installation cost of major appliances, financing or servicing of major appliances, or bonuses paid dealers and dealer salesmen.

Although the *tangible benefits* realized *have been more* than sufficient to justify the adoption of a sound Dealer-Utility Cooperation Program, it would be amiss were recognition not given to a most important *intangible benefit* which is highly prized by all Public Utilities—I speak of *good* Public Relations.

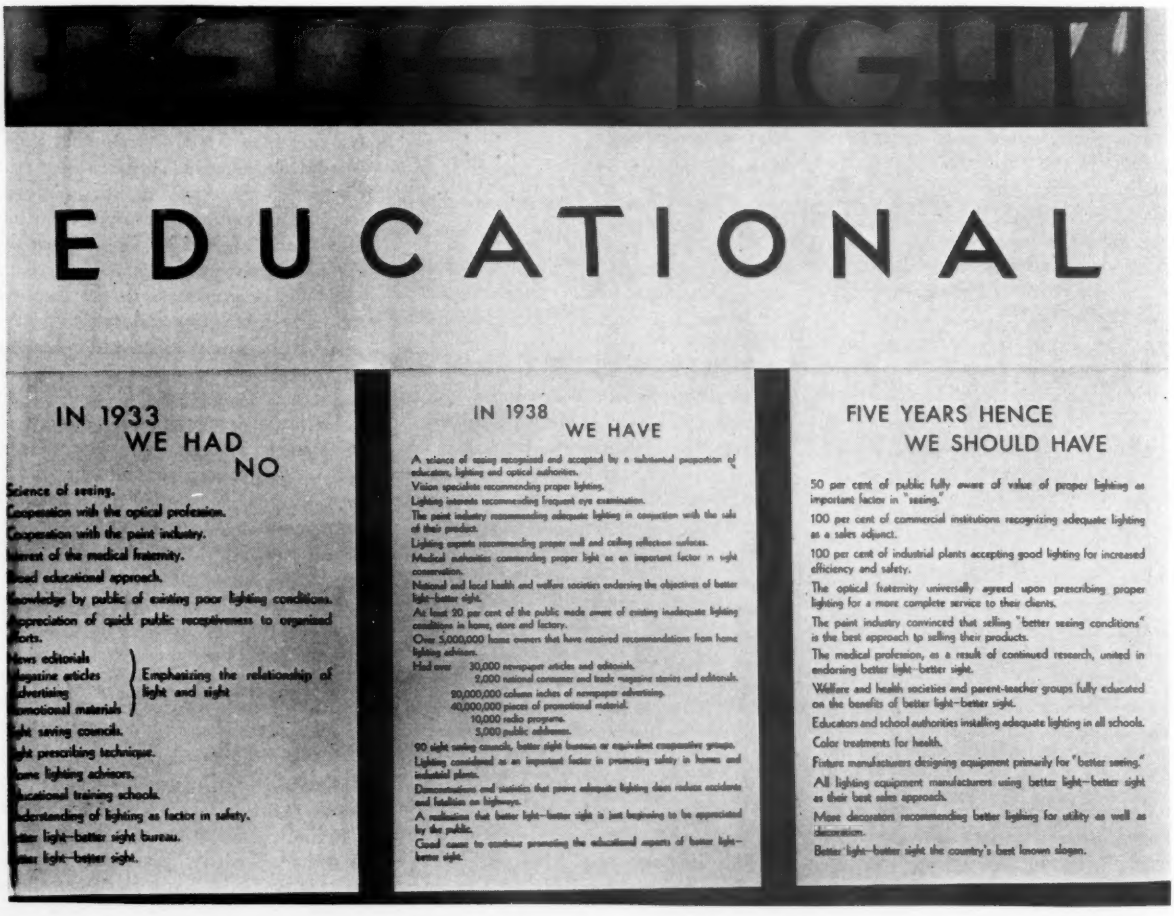
The far-reaching effect of a sound Dealer Program *can scarcely be evaluated in monetary terms, since good public relations cannot be bought at any price.* I feel safe in saying that *this by-product* of Dealer-Utility Cooperation is *more lasting and, hence, worth more* than the results secured *by an equal expenditure* directed *solely* toward creating good public relations.

Need I remind you that *equitable dealings* with hundreds of merchants not only enlists *their* dynamic good will, but also that of their families, their friends, and their employees. This may be likened unto the pebble cast into the water, causing ripples to be radiated in every direction and in ever-widening circles. And, so, the circle of favorable influence of a successful Dealer Policy will eventually encompass the vast majority of your customers.

To my mind, a successful and effective sales program is realized best through the use of a sincere dealer policy wherein both the dealers and the utility jointly merchandise—a policy free from ambiguity and, therefore, possible misunderstanding, such as occurred when, the minister's wife having died, he wired his Bishop, "Wife died Friday—Send week-end substitute."

I firmly believe that the utility should continue to carry on in sound merchandising, since past experience proves that the total overall sales of utilization equipment are greater if the utility merchandises appliances which are in the embryonic stage of public acceptance, and simultaneously carries on comprehensive planned efforts to organize and promote mass merchandise selling in cooperation with all sales allies. However, it should be noted *definitely* that utility merchandising is distinctly incidental to the selling of LIBERAL USE, FAIR VALUE and other BENEFITS of all electric service.

Regardless of the plan in use by the utilities represented here today, *I am sure that each one of us keenly feels the need of mass man power,* and *recognizes its importance in selling increased use.* Furthermore, this strong conviction remains—that this mass man power can be made available at minimum expense


EDUCATIONAL
IN 1933
WE HAD
NO
Science of seeing.
Cooperation with the optical profession.
Cooperation with the paint industry.
Interest of the medical fraternity.
Broad educational approach.
Knowledge by public of existing poor lighting conditions.
Appreciation of quick public receptiveness to organized efforts.
News editorials
Magazine articles
Advertising
Promotional materials
Emphasizing the relationship of light and sight
Sight saving councils.
Sight prescribing technique.
Home lighting advisors.
Vocational training schools.
Understanding of lighting as factor in safety.
Better light–better sight bureau.
Better light–better sight.
IN 1938
WE HAVE
A science of seeing recognized and accepted by a substantial proportion of educators, lighting and optical authorities.
Vision specialists recommending proper lighting.
Lighting interests recommending frequent eye examination.
The paint industry recommending adequate lighting in conjuction with the sale of their product.
Lighting experts recommending proper wall and ceiling reflection surfaces.
Medical authorities commending proper light as an important factor in sight conservation.
National and local health and welfare societies endorsing the objectives of better light–better sight.
At least 20 per cent of the public made aware of existing inadequate lighting conditions in home, store and factory.
Over 5,000,000 home owners that have received recommendations from home lighting advisors.
Had over 30,000 newspaper articles and editorials.
9,000 national consumer and trade magazine stories and editorials.
20,000,000 column inches of newspaper advertising.
40,000,000 pieces of promotional material.
10,000 radio programs.
3,000 public addresses.
90 sight saving councils, better sight bureaus or equivalent cooperative groups.
Lighting considered as an important factor in promoting safety in homes and industrial plants.
Demonstrations and statistics that prove adequate lighting does reduce accidents and fatalities on highways.
A realization that better light–better sight is just beginning to be appreciated by the public.
Good cause to continue promoting the educational aspects of better light–better sight.
FIVE YEARS HENCE
WE SHOULD HAVE
50 per cent of public fully aware of value of proper lighting as important factor in "seeing."
100 per cent of commercial institutions recognizing adequate lighting as a sales adjunct.
100 per cent of industrial plants accepting good lighting for increased efficiency and safety.
The optical fraternity universally agreed upon prescribing proper lighting for a more complete service to their clients.
The paint industry convinced that selling "better seeing conditions" is the best approach to selling their products.
The medical profession, as a result of continued research, united in endorsing better light–better sight.
Welfare and health societies and parent-teacher groups fully educated on the benefits of better light–better sight.
Educators and school authorities installing adequate lighting in all schools.
Color treatments for health.
Fixture manufacturers designing equipment primarily for "better seeing."
All lighting equipment manufacturers using better light–better sight as their best sales approach.
More decorators recommending better lighting for utility as well as decoration.
Better light–better sight the country's best known slogan.

Panels from Better Light-Better Sight Exhibit

to every utility which sponsors a sound Cooperative Dealer Selling Program—premised on the equilateral hypothesis of "MUTUAL INTERESTS FOR MUTUAL PROFITS."

To summarize, these important steps are involved in the adoption of such a program:

1. The utility should continue to merchandise aggressively—and specifically those appliances still in the development stage or where no other adequate outlets exist—such merchandising to be in coordination with equally aggressive selling by electrical dealers.

2. The adoption of a Dealer-Utility Program should, when announced, be presented with every detail of the plan thoroughly explained to all sales allies.

3. It should be made clear that the program will remain in effect *only so long* as the dealers take full advantage of the opportunity to merchandise aggressively.

4. All forms of utility advertising and sales promotion materials should be void of product mention, stress being placed upon—

(a) the advantages of *modern* electric service

(b) the diversified uses *for* electric service; and

(c) the cheapness *of using* electric service.

5. The utility compensation plan should be so designed as to foster rather than retard close cooperation between sales forces of utility and dealer.

6. Policies covering the servicing of appliances should be established so as to avoid any form of discrimination against any dealer, distributor, or manufacturer.

7. The services of the Home Service Department should be made available to dealers in the same measure that it is available to the utility itself.

8. Dealers should be given adequate advertising selling support, using such phrases as "Visit your Electrical Dealer," and should be made fully acquainted with National Selling Movements such as the Better Light—Better Sight and Modern Kitchen Bureau activities.

9. One or more utility employees should be assigned the full-time responsibility of—

(a) making periodic personal visits to dealers—augmented by occasional dealer group meetings

(b) rendering assistance to the training of dealer salesmen; and

(c) familiarizing dealers and their salesmen with the utility's rates.

10. Dealer-Utility Cooperation is a *give and take* proposition—your Cooperating Dealers cannot prosper on *Lip Service* predicated on *PROMISES ALONE* . . . but he can prosper on Sincere Service founded on the precept of the GOLDEN RULE.

These ten points are essential to a practical dealer program. They cover the fundamental requirements of a plan that offers a sound solution to the problem of more man power for increased kilowatt hour sales . . . a plan premised on integrity and sincerity of purpose, a plan founded on facts, a plan conducted for Dealer-Utlity *common good*—MUTUAL INTERESTS FOR MUTUAL PROFITS.

BETTER SIGHT
COMMERCIAL
IN 1933
WE HAD
NO
True realization of lighting possibilities.
Universally organized lighting departments.
Wide attention to existing low lighting standards.
Commercial customers in general with lighting intensities over 15 footcandles.
Industrial customers with lighting intensities over 10 footcandles (rare exceptions).
Homes lighted with more than 10 footcandle intensity (1 in 10,000).
I.E.S. portable lamp specifications.
Scientifically designed better sight lamps.
Small light meters.
Home lighting kits.
Commercial lighting kits.
Visibility meter.
Two-filament bulbs.
300-watt bulbs in homes.
300-watt bulbs with medium base.
Bipost bulbs.
Light selection recorder.
Scientific sales technique.
National portable lamp advertising.
SATURATION IN THE LIGHTING BUSINESS.
IN 1938
WE HAVE
Utilities representing over 75 per cent of the total customers of the country carrying on aggressive lighting programs.
5,000,000 homes with some portion of lighting of 20 to 30 footcandle intensities.
1,000,000 commercial institutions where lighting has been doubled and tripled.
Scientific specifications for eight types of portable lamps.
Certification of lamps meeting I.E.S. specification.
Over 3,000,000 I.E.S. better sight lamps sold with tags.
An estimate of another 3,000,000 meeting I.E.S. specifications sold without tags.
Potential prospects for sale of 90,000,000 scientifically designed lamps.
Had $9,000,000 spent in national consumer magazines advertising I.E.S. better sight lamps.
Over 9,500 skilled lighting salesmen and engineers.
2,000 home lighting advisors.
Power engineers selling lighting.
Proofs that aggressive lighting promotion pays.
50,000 small light meters in use.
9,500 home lighting kits in use.
2,500 commercial lighting kits in use.
2,500,000 300-watt bulbs in use in homes.
3,000,000 two-filament bulbs in use.
400 miles of high intensity highway lighting.
Several sources conducting 10 to 15 training schools annually.
Plenty of evidence that the public does appreciate better lighting if, and as, shown.
NO SATURATION IN THE LIGHTING BUSINESS.
FIVE YEARS HENCE
WE SHOULD HAVE
All utilities satisfied that lighting is still the basic load.
50 per cent of homes equipped with I.E.S. better sight lamps.
25 per cent of all schools completely relighted.
Double present-day average illumination in homes and commercial institutions.
Triple present-day average footcandle intensities in industrial plants.
500-watt I.E.S. lamps.
All-night lighted homes.
Eye strain meters.
Glare detectors.
7,500 miles of high intensity highway lighting.
Artificially sunlighted offices and schoolrooms.
100 footcandle installations.
Extensive plant growing from incandescent bulbs.
STILL NO SATURATION IN LIGHTING.

Panels from Better Light-Better Sight Exhibit

Developing Increased Use of Electricity Among Rural Customers

By D. E. Karn

Vice-President, Consumers Power Co., Jackson, Mich

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

AMERICA in the last ten years has seen the city march to the farm. Surveyors have stood in cornfields and squinted through transits across the pasture lots. Mechanical pole-hole diggers have engrossed rural spectators in every state. Poles have been set, wires strung and lines energized to the accompaniment of stirring speeches and widespread publicity. Rural electrification has been called a dramatic episode in the history of America. Learned papers have been written about its social significance.

Unfortunately, perhaps, we in the power business are neither dramatists nor sociologists. At least not primarily. I will not say we don't enjoy applause, and certainly I would not suggest that we take no satisfaction in the social betterments that follow rural electrification. My point is that, being primarily business men, we must not let the glare of the dramatic spotlight nor the glimmer of the sociologist's study lamp lure us away from consideration of rural electrification in the cold light of the business day. Otherwise we may find ourselves in the position of the colored laborer in the South whom the late Booker T. Washington used to tell about. He deposited a few dollars in a new bank established by a prototype of the celebrated Andrew H. Brown. When he went to draw it out, the banker informed him politely that the interest had "done et up the principal."

A million farms are getting high line service today that were not getting it ten years ago. Generally speaking, they are getting it at the same rates per kilowatt-hour as their neighbor in the city. This circumstance has caused some discussion here during the last few days, and I want to dwell on it for a moment. It has an important bearing on my subject.

The company with which I am associated, Consumers Power Company, of Michigan, bill farm customers and city customers at exactly the same rates per kilowatt-hour. We have no choice in the matter. The State authority under

MR. KARN

which we operate forbids rate discrimination between one householder and another, even though one may live inside the city limits and the other out in the country.

We do not quarrel with that ruling. In common with the electric industry as a whole, we have felt all along that the farm customer was entitled to service, and at low rates. True, farm customers run fewer to the mile than city customers, and in some respects it is more expensive to serve them. It costs more to read their meters and to maintain their service. On the other hand, the industry has discovered how to build sturdy farm lines at low cost. A mile of rural line costs much less than a mile of line in town. Furthermore, the farmer usually is required to pay a higher minimum bill than the city man. A city customer of Consumers Power Company, if his electric consumption is low enough, may pay only 75 cents a month. A farm customer must pay a minimum monthly bill averaging $2.50 a month. Expressing it another way, the company has a guaranteed revenue of $12.50 per mile of farm line. For some companies, the minimum is based on investment rather than mileage. In either case, the minimum bill tends to offset whatever extra cost there may be in serving the farm customer.

However, the real reason why it is not unfair to spend a little more money taking electricity to the farmer at the same rates per kilowatt-hour is that the farmer is a bigger user of electricity. Potentially if not actually. In the case of Consumers Power Company, the farmer today is actually using substantially more electricity than the urban customer.

We have more than 41,000 farm customers. I don't mean other rural customers, of which we have an approximately equal number, but only genuine grass-roots farmers. In 1937 they used an average of 1,079 kilowatt-hours each. For domestic customers of all kinds, *including farmers,* the average was only 1,004 kilowatt-hours. Considering that some 23,000 of these 41,000 farmers had been receiving service less than two years, and that in many cases the initial cost of wiring their houses and farm buildings had left them without money enough to buy all the electrical equipment they wanted, I don't think we have any reason whatever to apologize for the farmer as a consumer of electricity.

Development of the farm load, however, has only begun. The big pull lies ahead. With operating costs shooting upward, the electric industry must build load in every way possible. In that direction lies our salvation. Farm load-building should command special attention because the farmer is using a smaller percentage of the electricity he should be using than any other class of customer. We look forward to the time when the average farmer will use 1800 or even 2000 kilowatt-hours a year. The sooner it comes the better—for him and for us.

Let us not be distracted by the romantic articles that have been written nor the fulsome speeches that have been made about rural electrification. Rural electrification is dramatic, yes. It is socially significant, yes. But the main part of rural electrification comes after the lines

are built. Neither the farmer nor the utility company is getting adequate returns from rural electrification today. It is up to us to show the farmer that *for his own benefit* he should double his use of electricity. That it will benefit the utility too is a matter of no particular concern to the farmer. He won't use electricity to help us, nor refrain from using it in order to hurt us. Like other human beings, he is interested primarily in himself. So I believe there should be an aggressive selling campaign directed at the farmer, and the slogan of that campaign might well be "Electricity for Farm Profit."

I have heard it said that the job is one of education, not of salesmanship. I shall not quibble over words. If you want to call it education, that's all right. Nevertheless it's a selling job. The farmer must be sold on the idea that electricity is his cheapest and best servant. He's a practical fellow, and often he handles in actual cash only a few hundred dollars a year. If you think of salesmanship as high pressure language and trick psychology, as something through which you foist upon a buyer something he does not want or need, you will find the farmer a poor subject for salesmanship. But I'm sure none of you thinks of salesmanship in that way.

Elbert Hubbard used to say that the only good business deal was one that benefited both parties. I think of salesmanship as the driving of deals of that type. Our deal with the farmer answers Elbert Hubbard's description. To benefit ourselves we must sell the farmer on the proposition that a great increase in his use of electricity will benefit *him*. We must bring about general acceptance of the thought contained in the phrase, "Electricity for Farm Profit," by which we mean not profit for the electric company, though that will come too, but profit for the farmer. Profit not only in such intangible things as increased leisure and greater cultural opportunities but also, and most emphatically, profits in dollars and cents.

The facts are on our side. All we need do is get them before the farmer. He is shrewd and analytical. He won't accept something as a fact merely because we say it's a fact. But if we can prove our contention that more electricity means more profits, and I'm sure we can, the farmer will accept it and proceed accordingly. Then there won't be any further occasion for anyone to wonder whether farm lines are a sound investment. Their worth will be obvious.

Every big selling job, in its early stages at least, is a job of education. Few persons drank orange juice for breakfast 25 years ago. Now we all do. Why? Because the orange growers banded together, made their product available throughout the country at a reasonable price, and convinced us through shrewd and persistent salesmanship that we would be doing ourselves a favor by tossing off a few ounces of orange juice the first thing every morning. They could not have done it without having the truth on their side. On the other hand, the fact that doctors recognized orange juice as a healthful drink would not have made it the national eye-opener without a hard, intelligent selling campaign.

We are in the same position the orange growers were in. We have made electricity generally available to the farmer at a reasonable price. We have scientific proof that its liberal use means greater farm profits. Our job of education, or salesmanship, is well under way. It must be continued with all the vigor we can command.

So far as our company is concerned, and I think it is fairly typical, the farm load-building job falls into two distinct divisions. The company retails domestic electric appliances. As to these we have a merchandising job as well as an educational job. Electric farming equipment we do not sell. We feel that in our territory it is better to leave merchandising of this type to the hardware dealers and implement men. So our job in regard to electric farming equipment is educational and cooperative. It is a selling job, but it looks toward sales in which we have no direct participation.

Our merchandising department tries as hard to sell domestic appliances to farm customers as to urban residents, and in much the same way. For closing sales and attracting prospects it has found a Demonstration Coach effective. This Demonstration Coach is simply an automobile and trailer of attractive design. The trailer contains a few major appliances—a refrigerator, a range, a water heater, a washing machine and possibly one or two other items. It permits a demonstration and sales talk at the farmer's own doorstep, and meets the problem of the farm woman with little time to visit a city salesroom.

Our dealer cooperative organization also is awake to the importance of the farm market for domestic appliances. The farm wife's interests are considered in the sales campaigns and advertising programs sponsored by this department in cooperation with independent dealers in domestic appliances. The theory of dealer cooperation is that the important thing is to get the equipment on the line, regardless of whether the sale is made by the utility company itself or by someone else. This reasoning obviously is not affected by the fact that the customer lives on a farm.

We are preaching the gospel of "Better Light Better Sight" to farm people just as to city residents. Incidentally, this subject alone offers a chance to boost average farm use as well as city use, by hundreds of kilowatt-hours per year.

However, it is not with domestic farm load that I am mainly concerned today. It is important. It should not be neglected for a moment. But aside from the matter of lighting, I think the educational work in regard to domestic electricity is well advanced. The great promotional campaigns in behalf of the electric range, the electric refrigerator, the electric water heater may not have had the farm woman as their target, but they hit her anyway. They still are hitting her almost every time she picks up a newspaper or magazine. She has thought of an electric range as she worked over her wood stove on a hot summer day, of a refrigerator every time she found the milk soured or the meat spoiled. I don't believe much argument is needed with her. If she can provide herself with electric appliances she will do it. Let's make it as easy for her as possible.

Turning now to her husband, we are confronted with a much bigger problem. Domestic appliances for one farmhouse are the same as for another, but there are many kinds of farms, each with different requirements in the matter of electrical farming equipment. Farming appliances have had no such promotional campaigns as refrigerators or ranges. There is no unanimous realization of their value.

How can we sell the idea that electricity has a great contribution to make to productive farm enterprise? How can we promote acceptance of the thought, "Electricity for Farm Profit?" Perhaps I can help you answer these questions for yourself by telling you of some of the work of our Farm Service Department.

Let me say parenthetically that Consumers Power Company does not claim to have the complete and final answers

to all the many questions connected with farm load-building. We have followed a carefully considered course, and the results have been largely satisfactory. A start has been made. However, I speak in no complacent spirit, nor am I unmindful that the entire industry has worked for years on the farm load-building problem. I offer this account of our policies and our experience merely in the hope that it may help to crystallize the general thought.

The Farm Service Department was set up in 1936. It is headed by Mr. H. J. Gallagher and it includes 14 rural service engineers, working in ten operating divisions. Through advertising of several kinds, the company offers free agricultural engineering service to its rural customers. Thousands of inquiries were received in 1937.

These engineers don't sit in offices and write letters. When a letter comes in from some farmer who wants to know how to wire his poultry house, or how he can spur nature with soil heating cable, or what sort of air conditioning is needed to preserve his apples for the winter market, the rural engineer gets in his car and drives to the farm. He studies the question thoroughly, right on the ground. In that investigation he is working for the farmer, not for the company. We take the position that the best thing for the farmer is the best thing for us. It is impossible to obtain any measure of the results of this work, either in load-building or good-will, but I believe it has been worth many times its cost.

Sometimes the rural engineer doesn't wait to be invited to a farm. Suppose that in looking over a new farm customer's bill for a few months he finds that the farmer is using less electricity than is covered by the minimum bill. He goes to the farmer and tells him about it. Perhaps the farmer wants to know what would be a good way to use those extra kilowatt-hours. The rural engineer looks over the situation and makes a suggestion or two. He may go on and explain that while this or that electrical application might increase the bill a little, the average price per kilowatt-hour would be reduced and the farmer would increase the efficiency of his farm out of all proportion to the small additional expense. An increase in use may follow. Frequently a visit of this sort leads to a close relationship between farmer and rural engineer. Many a Michigan farmer now insists on consulting his friend, the rural engineer, before deciding upon new equipment.

Electric schools are sponsored by the Farm Service Department in cooperation with the Michigan State College, the county agricultural agent, the county home demonstration agent and the local dealers. All local arrangements are handled by the county agricultural agent. Domestic and farm equipment to be demonstrated is supplied by local dealers. Additional farm equipment and wiring displays come from the College, transported by a company truck, which also carries sound and motion pictures and projectors. Demonstrations are conducted by representatives of the College, the County and the utility company.

A typical school consists of two afternoon and two evening programs. In the afternoon the women study cooking, lighting and the use of home appliances. Men are instructed in wiring and in equipment operation. At joint meetings in the evening, both men and women hear discussions of profitable uses of electricity, rates and construction policies. Motion pictures are shown, and proper lighting demonstrated.

Such schools stir interest in electrical applications of all kinds. They are extremely popular with equipment dealers, for they develop many sales prospects. But promotion of sales is barred while the school is in session.

Good dealer relationship is of the utmost importance. Since the company itself does not merchandise electric farming equipment the success of any campaign to sell electricity for productive farm use is dependent on the cooperation of alert, reliable hardware merchants and implement men. Our Farm Service Department and our Cooperative Merchandising Department maintain close contact with manufacturers, jobbers and dealers. At every opportunity, the dealer is made to feel that he is an important part of the program. His equipment, bearing his name, is shown in the company's rural electrification booths at county fairs and similar exhibitions. We are thinking now about making some of our show windows in the smaller communities available for the display of dealer merchandise such as electric brooders, feed grinders and water systems.

Newspapers are supplied with weekly information as to line extensions about to be built, and this enables dealers and wiring contractors to work the territory even before service is available. It is an indirect sort of cooperation, and yet an important one.

A most successful phase of the cooperative dealer plan has resulted from the work of the Water Systems Council of the Sales Committee of the Edison Electric Institute. This plan offers many possibilities as to other equipment.

The Farm Service Department's activities are correlated closely with the rural electrification work not only of the Michigan State College, and the county agricultural agents, already mentioned in connection with the electric schools, but also with that of the farm organization and the agricultural high school teachers.

Every autumn farm organizations are supplied with a list of program material available from the company for their winter meetings. Listed are cooking and home lighting demonstrations, sound and motion pictures and a diversity of subject matter for discussion. Program committees of the organizations appreciate this service and make free use of it.

The company has cooperated with the 4-H Club rural electrification projects of Michigan State College for several years. It helped in the recent project of the Westinghouse Electric Company. Work of a similar nature for older students is promoted through the vocational teachers in agricultural high schools from both the domestic and farm utilization angles.

The value of this type of work is two-fold: first, in the direct increase of electric uses accomplished by interesting the parents through the children and, second, in the effect on the youth who becomes the customer of tomorrow.

It is generally recognized that an adequate wiring job is an essential part of a progressive load-building program. In recognition of this, a condition of our present policy of extending rural service, as filed with the State Utilities Commission, is that each farm customer shall install a three-wire service entrance of not less than 60 ampere capacity. This, of course, is only the first step. To be effective it must be augmented by educational work on the wiring beyond the service entrance. In addition to discussing this subject at practically all group meetings, the Farm Service Department has conducted numerous wiring schools in communities about to receive service.

The general procedure for such a school is to invite all prospective customers to a farm in the community. The rural engineer then lays out an adequate

(*Continued on page* 150)

The Chemurgic Challenge

By Wheeler McMillen

President, National Farm Chemurgic Council

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

THE electrical industries have had good reason in past decades to consider themselves slightly less dependent than many other businesses upon the ups and downs of agriculture. Their concentration has been strongly urban, and only in relatively recent years has the agricultural market become of especial direct interest. They have always shared, however, in that dependence which all the national economy shares in the welfare of the basic industry. Now that manufacture tends to turn increasingly to the soil for raw materials, the electric mind has additional reason to re-examine its concern for agriculture.

One of the great problems of the last two decades has rested in the fact that the great group engaged in agriculture has not been sharing fully and fairly in the national income. The primary reason for this has been that agriculture could not operate upon a basis of maximum productivity and maximum profit, because the country could neither export nor eat as much as agriculture could produce. Low profits or reduced production seemed to be the alternatives.

With export markets largely closed, with millions of acres formerly used to feed horses facing another lost market, agriculture's energies have not had full and profitable outlet. Our agricultural problem is not unlike that of an electrical company in the one respect that a large volume of salable output is practically a necessity. Yet, production of foodstuffs could not be expanded indefinitely, because even the richest customer was not often disposed to buy more than three meals a day.

Consequently a wholly different approach has been developed. This approach is based upon the concept that new wealth can be created out of the soil which can be utilized by industry and turned into innumerable inedible and non-wearable products which are used by the American people. In the process idle acres will become productive, idle hands will find employment, new industries will be created, national income will be enlarged so that debts and taxes will be easier to pay, and new and stable industries will lend firmer values to rural and urban land.

MR. McMILLEN

The objectives of this approach are to commercialize new crops, new products from old crops, and to extend the domestic production of agricultural items now imported from foreign lands. By such means farm income for new raw material wealth will be increased. For every new raw material dollar, the national income goes up seven to ten dollars. The relation between farm income and factory payrolls is spectacularly close. Larger farm income will expand the national income.

Fostered by an organization of leaders in agriculture, industry and science, known as the National Farm Chemurgic Council, this approach to improved national conditions does not depend upon legislation. The best evidence of that statement can be exhibited by revealing some of the progress already made.

Farthest advanced, perhaps, is the southern paper industry. Seventeen new plants, with a total investment of around $160,000,000, are in production or construction. Their present output is principally woodpulp for kraft papers and for rayon. Instead of sending to Finland and Scandinavia and other foreign areas for woodpulp, we are using increasing quantities of pulp made from the trees of our own Southland, buying wood from American farmers, having it cut by American labor and processed by American workmen with American materials. This movement to the South is based very largely upon about $350,000 worth of research, financed mainly by the Chemical Foundation, and done by Dr. Charles H. Herty who dramatized the ability of the South to produce the raw material for the 50 pounds of paper used per capita here each year.

Most spectacular of the chemurgic industries, though not yet quite so far advanced, is destined to be power alcohol. At this hour in Atchison, Kansas, motor trucks are unloading corn and grain sorghums, and the owners are going away with checks in their pockets. This grain is processed through an extraordinary modern plant into anhydrous ethyl alcohol. Blended at the rate of ten per cent with gasoline, this becomes a new motor fuel known as Agrol 10. In nearly 2,000 filling stations in Kansas, Nebraska, Iowa and other states, Agrol 10 is being sold. The blend provides a remarkable fuel, equal in octane rating with the best premium gasolines. It clears the mechanisms of gum and carbon, gives off very little carbon monoxide, and carries the car more miles per gallon. The capacity of this experimental and demonstration plant, which also was financed mainly by the Chemical Foundation, is 10,000 gallons of alcohol per day.

To provide a ten per cent blend for all the motor fuel used annually in the United States, there will have to be erected about a thousand such plants, each using many tons of steel, copper, and other materials. The alcohol can be made from any starch or sugar crop —corn, grain sorghum, other cereals, sugar beets and cane, sweet potatoes, or Jerusalem artichokes. From twenty to thirty million acres of land will be required. Should the motoring public call for a blend higher than ten per cent,

the crop acreage requirement would go up accordingly. Some 22 countries of the world now use alcohol fuels of varying proportions and for varying reasons.

It may be remarked that negotiations are now under way for additional plants to be locally and privately financed. It may also be pointed out that motor fuel is not the only prospective use for cheap anhydrous ethyl alcohol, made from farm crops, which certain chemical prophets predict may become the next great new industry of the nation.

Another magnificent new industry for agricultural America lies in the field of starch itself. Last year the United States sent half way around the world, to Java in the Dutch East Indies, for 566,000,000 pounds of starch from casava, sago and tapioca, which was no whit better than the starch that can be grown on American farms. Formerly it was necessary to import certain high grades for use in textile, paper and adhesive industries. A new factory at Laurel, Miss., is making starch of the highest qualities from sweet potatoes. It is able to pay farmers a price that gives better acre returns than cotton has ever brought them. Recently new discoveries for simple and economical dehydration processes pave the way for all year operation. There can be no fewer than 500 sweet potato starch factories in the southern states in a few years. This development would be accelerated if our trade treaty with the Netherlands had not bound starch on the free list, but it may be questioned whether the South will permit this mistake to be repeated when the treaty again comes up.

The rapid growth of the soybean crop and its accompanying industries is well known to you. In paints and scores of other uses the oil has found its way, while the meal and protein are going into plastics and for various other purposes. This versatile crop, good for feed, for livestock, good for edible oils, good for automobile parts and linoleum and hardly anyone knows how many uses, now occupies millions of acres, employs many hundreds of men, and even has risen to the dignity of a place on the Chicago Board of Trade. And the future is yet before it.

There are other chemurgic fields which have been scarcely touched. We are importing drying oils for paints and varnishes from far lands, under the precarious circumstances of wars and interrupted transportation, when ample supplies might well be grown at home. The tung oil orchard is expanding along the Gulf of Mexico. Men are experimenting with the agriculture and utilization of perilla seed oil, sunflower oil, castor oil, safflower, sesame, and others. Cottonseed, linseed and peanut oil we produce, though we produce far too little of linseed oil. We are dependent upon distant continents for far too many fibers—for jute, hemp, flax, to name three of importance; and we import, free of duty, millions of pounds of carpet wools that we ought to be shearing from big sheep not now grazing on the dry western plains. We import seventy-five million dollars' worth of furs, some of which ought to be running wild on our less valuable lands, or be growing in domestication.

A host of chemurgic opportunities are within the horizon. Some require more research, some require only the venture of capital. A few may require some measure of tariff protection—other than that no government aid need be sought. This movement is typically American, proceeding on the good old bases of initiative and self-help.

The chemurgic industries share one great distinguishing feature. All are based on products of the soil. They involve the utilization of annually renewable supplies of raw materials, as contrasted with those extractive industries which use up our irreplaceable natural resources.

All the nation's new wealth comes from only four places—from the seas and the mines, the forests and the fields. About 80 per cent of it comes from agriculture. Nor is it strictly accurate to say that it comes from the soil, because only a tiny portion, the mineral content comprising usually only about two per cent, is actually extracted from the soil. More than 95 per cent of the material in a tree, a fiber, grain or tuber, is actually nothing but atmosphere and rain, transformed into substance by the mysterious alchemy of sunshine. In other words, the supplies are not only annually replaceable, but actually inexhaustible.

The chemurgic approach to increased national wealth is hindered neither by the limited capacity of human stomachs nor by the vagaries of export trade. It involves no illusions of magic, unless chemistry is magic. This country cannot progress by dividing the wealth nor even the income that currently exists. Nor it cannot progress by any other method than constantly creating wealth. The President suggests that the national income should be increased from the present sixty billions to ninety or a hundred billions. These sums cannot be dreamed into existence, nor imagined into existence, nor legislated into being. A hundred billion dollars' worth of wealth can be obtained in only one way—it must be produced.

Wealth is not a static thing that can be wrapped up and kept. It is dynamic and active, utterly dependent upon the every-day processes of production. And these processes of bringing forth actual, material, tangible things are the processes that make employment. Jobs are made by tonnage, tonnage that has to be produced, transported, warehoused, manufactured, processed, packaged, accounted for, financed, wholesaled, retailed, delivered and serviced. The new tonnage must come largely from the land. Since farmers can't profitably expand greatly their production for present uses, the turn to new uses must be made. This is the route through which idle acres can be made profitably productive, idle hands can be put to work, new dollars sent coursing through the channels of commerce creating new employment as they go, and new wealth all along the line to maintain our standards of American living, pay our taxes and discharge our debts. This is the route to new industries in your towns and cities, new demands for electric current and the devices to consume it.

If America takes care of agriculture, and of the people in agriculture, agriculture will take good care of America. The soil is the first line of wealth, and its tillers the last stand, should we come to that, of that American way of individual enterprise and initiative we call capitalism.

By drawing upon the infinite resources of the soil, the atmosphere and sun, applying to them the knowledge and intelligence of the scientist, and the enterprise and capital of the industrialist, it may be possible to carry this proud nation of ours to new levels of productivity, new heights of national income, higher and more broadly distributed standards of living in terms of real wealth. It can be done. I believe it can be done in these ways. This is the challenge chemurgy offers to the America of 1938!

Work of the Battelle Memorial Institute

By Dr. C. F. Hirshfeld
Detroit Edison Company, Detroit, Mich.

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

LEADING executives of our industry have observed from time to time that lack of proper cooperation appeared to be resulting in an unnecessary waste of time and money in research conducted by individual operating companies. Various suggestions were voiced and a few efforts were made toward some degree of coordination. Finally in December 1933 there was formed the Edison Research Coordinating Council.

This was a body made up of operating companies that chose to assume the financial burdens of membership. Its objectives were:

(a) To serve as a clearing house between companies with respect to research and development work so as to prevent unnecessary overlapping of effort,

(b) To administer research efforts of wide interest to the industry, and

(c) To serve as a central investigating and contributing body in connection with researches of outside technical associations which requested financial or other support from our industry.

This organization functioned for about two years and was then succeeded by Utilities Coordinated Research, Incorporated. Experience had shown the necessity of an incorporated agency to facilitate the execution of contracts, and the ownership of patents and other forms of property. Utilities Coordinated Research, Inc., or U.C.R. as it has been called, took over the assets and liabilities, the contracts and property of the earlier organization. It has continued the work of that organization.

One of the first projects undertaken by the Edison Research Coordinating Council was given the title "Metallurgical Applications of Electricity." It is the one I have been asked to tell you about today. It was believed that the metallurgical field offered vast and only partly explored opportunities for the further use of electricity for purposes other than mere power supply, and that these could be uncovered and evaluated by a properly conducted survey on a national scale. It was also felt that the industry should obtain and maintain authoritative information with respect to the economic balance between electrical and competitive methods.

DR. HIRSHFELD

The project was placed at Battelle Memorial Institute under the personal supervision of Dr. H. W. Gillett, a scientist well known to most, if not to all of you. The work on this project at Battelle has been carried on continuously since August 1935. It terminates as of today, not because we have exhausted the field but because we have been unable to finance further efforts. What I give you today is therefore in the nature of a final report on this project. When I agreed to address you I expected to deliver a progress report.

We started with an extensive survey of the field. Since the personnel involved was already familiar with the literature of the subject, the greater part of the survey consisted of visiting metallurgical plants in which electrical processes were being used or might possibly prove to be useful. In a rough way, the survey was divided under three heads; namely,

A. Applications involving fusion of metals,

B. Applications involving heating of metals, and

C. Miscellaneous applications involving metals.

Every effort was made to obtain correct information and to arrive at unbiased conclusions. The survey personnel was instructed to be quite "hard-boiled" in its appraisals and it has proved so in practice. We wanted to learn when and where other than electrical methods can do an economically better job as well as to learn where and under what conditions the use of electricity is indicated. It is interesting to note that although the survey has brought to light much information favorable to the extended use of electricity in this field it has also very definitely ruled out electricity in favor of fuel heating in a number of cases. Further, some of these cases happen to represent uses on which many of our power salesmen have been expending real effort.

The results of the survey were published in a number of progress reports and leading features have been summarized in topical reports, each devoted to a given subject. These reports have been distributed regularly to those supporting the endeavor. The titles of a few of the topical reports will serve to indicate the wide variety of subjects covered. Some of the titles are:

Electrolytic Pickling in Metallurgical Applications.

Opportunities for Electric Heating of Steel for Hot Forging.

Controlled Atmospheres from the Electric Furnace Point of View.

Present Opportunities in the Electric Melting of Cast Iron.

Competition of Radiant Tube Furnaces with Electric Furnaces.

The mass of material contained in the many reports that have been submitted is both great and valuable. Any power salesman who has mastered all this information should be able to do a better job for his company and for its customers than he could have done before. Possibly most important, he will have learned what not to waste his efforts on.

During the progress of this survey there have come to light from time to time certain subjects on which it was felt desirable to institute research at Battelle. Typical examples are furnished by the investigations of Curie Point Alloys and of Controlled Atmosphere An-

nealing, both of which are discussed later.

Limitations of time and space do not permit me to give a lengthy account of all that has been done on this project since its inception. It requires many hours to read the accumulated material and many more hours to digest it. I shall therefore content myself with summarizing in the following paragraphs some of the principal findings and recommendations.

Electrolytic Pickling of Iron and Steel

At the time of preparing the report four different electrolytic pickling processes were in more or less successful commercial operation. These processes vary greatly in their characteristics and in the types of work for which they are best adapted. All are still being improved although being used commercially on a rather extensive scale.

The conclusions drawn were that, properly installed and used, electrolytic pickling promises both better and cheaper results in those cases to which it is adapted. Moreover, industries which have to pickle iron and steel are so well distributed over the country that many operating companies should find this field a profitable one for development. Since the presentation of the report the use of these pickling methods has shown continuous expansion.

Closely allied with electrolytic pickling are other processes such as electroplating and various special applications for stripping coatings off metal surfaces or applying special surface coatings. The industries using or capable of using such processes are very generally scattered throughout the industrial areas of the country and represent relatively numerous outlets for the use of our product. Moreover, completely satisfactory substitute methods do not appear to have been discovered. In this day it is foolish to make a broader statement; progress is too rapid. Something unknown today may be in commercial use tomorrow. These electrical methods will be developed most rapidly if power salesmen become and remain familiar with the results of the research work now being conducted in these fields.

Electric Furnace Cast Iron

Many virtues have been claimed for electrically melted cast iron. These will be referred to first.

The greater ability to superheat the molten metal in electric furnaces has been held to be an advantage, superheating having been supposed to result in remarkable physical properties. Investigation shows that superheating to too high a temperature is definitely detrimental and that the degree which is beneficial can be obtained in the cupola.

Superheating plus ladle additions has been proven beneficial. However, a really skilled cupola operator can produce as much superheat as is required to obtain substantially as good results as are obtainable from the electric furnace.

Metal agitation which has been held to be one of the advantages of electric melting does not appear to be beneficial and for certain purposes it appears to be slightly detrimental.

Control of furnace atmosphere to the extent thus far either attempted or suggested in electric furnaces appears to have no appreciable effect upon the quality of cast iron produced.

The advantages of electric melting do not consist of ability to produce irons of a quality not obtainable from the cupola when the latter is operated to produce the best results of which it is capable. They are largely tied to ease of composition control, flexibility of operation, ability to use cheap borings, ability to handle small special heats and the economic possibilities of duplexing. These advantages suggest three types of live prospects; namely,

1. Foundries in localities where borings are cheap and in which the use of such borings in the electric furnace permits economic competition with the cupola in the production of ordinary grades of cast iron,
2. Specialty foundries which produce special alloy cast irons, and
3. Tonnage foundries which recognize a necessity for a small production of a variety of compositions on top of a relatively large production of one or several standard grades. An economical procedure in such cases might well be the duplexing in an electric furnace of hot metal taken from the cupola.

Controlled Atmosphere in Steel Treating

At the time this project was undertaken there had already occurred a considerable commercial development in this field and the literature contained a large amount of reliable information regarding both theory and practice. However, there remained great unexplored areas and huge gaps in the available knowledge. Our effort was directed toward exploring these fields and closing these gaps.

The work was divided into three parts, namely:

1. Correlation with, and completion of, studies of the effects of various atmospheres on steels in heat treating processes; using both plain carbon and alloy steels;
2. Study of electric heating resistor life in various atmospheres and at various operating temperatures; correlating this work with other somewhat similar studies and with the findings of resistor manufacturers; and
3. Study of service of electric resistors in controlled atmospheres under semi-commercial or simulated plant conditions.

Since the fall of 1936 when this project was initiated a tremendous amount of detailed investigation has been accomplished. Summaries have been published from time to time in *Metals and Alloys* starting with the issue of June 1937. The last of these summaries will be published within the next few months. This field of investigation has not by any means been exhausted but enough has been done to clear up many problems and to indicate promising directions of attack upon others.

Induction Heating at Intermediate and Low Frequencies

The well known theoretical and practical advantages of induction heating as a solution for many heating problems led to a study of this subject. The high frequency field has been fairly well explored and to some extent it has been developed. The principal difficulty met with is the high cost of equipment required for producing the high frequency. There have been some successful installations of induction heating using 60 cycle current and it appears that more could be justified economically.

The great difficulty in the development of this field lies in the fact that to some extent each application differs from all others and that the manufacturer of electrical equipment cannot afford to do the engineering required unless permitted to charge what appear to be exorbitant prices for the equipment sold. Therefore it seems probable that the field must be developed either by the individual users or through some cooperative engineering agency not now in existence.

Some progress has been made at Battelle in the development of schemes and methods of design which promise to extend the field of induction heating at normal and intermediate frequencies. As these are the subjects of patent applications little can be said about them now. A trial application for one set of conditions is giving very promising results in commercial practice.

It was suggested several years ago that inductive heating devices might be made self-regulating as to temperature

by using a steel core whose Curie point is at the desired operating temperature. We believed it desirable to investigate this possibility and have done so to some extent.

Low Curie Point Alloys

Investigation showed that while Curie point alloys had been studied by a number of individuals the results were spotty; they covered small temperature ranges and were incomplete with respect to magnetic properties. The investigation at Battelle has resulted in the development of a whole series of practically usable alloys having the Curie point at any desired temperature from about −100 to about 1100° F.

Further the investigation covered the magnetic properties of all these alloys and a number of possible practical uses that might be made of them. Design formulas were developed for different types of equipment including such alloys in their structure.

As patent applications have been made on some of the results of this investigation it is not possible at this time to enter into further details in connection therewith. It is expected that when the patent situation is cleared up the more important results will be published.

Competition of Radiant Tube Furnaces

Within the past few years several different forms of radiant tubes for furnace heating have been developed. In most cases the tubes are made of heat resisting metal but a few non-metallic tubes have been used. A careful field investigation shows that the metal tubes have given satisfactory results in a great number of different applications. When the necessary fuels are available at the requisite price, and when temperatures are not too high, these devices are truly competitive with electric heating in many fields, such as annealing of carbon steel, and vitreous enameling.

At present the commercial upper limit of metal temperature appears to be about 1850° F. corresponding to a furnace temperature possibly one hundred degrees lower.

Electric Heating for Forging

A survey shows this to be one of the biggest potential markets for electric heating and one of the best distributed geographically. However, its development is awaiting the design and production of a real heating machine, not merely the substitution of electric heating devices in a conventional furnace. Certain devices of limited availability but approaching this sort of heating machine are now in use, such as the electric rivet heater and the Berwick heater. They may represent the beginning of the sort of development required but several well known difficulties must be overcome before the fields of use of these devices can be greatly extended.

High frequency, induction heating in this field is exceedingly promising and has already reached at least the semi-commercial stage. However, the high first cost appears now to limit its applicability to very special and restricted fields.

Electric Glass Melting

Although the Battelle research was intended to be confined to metallurgical applications, it was extended to cover the making of glass which is one of the most promising fields for the application of electric heating. The operation is carried on at a temperature from 2800° F. upward, depending on the composition of the melt. Representative fuel fired melting installations show thermal efficiencies varying from 7 to about 20 per cent. The high temperature and such low thermal efficiencies of fuel fired equipment favor electric melting.

About 3,000,000 tons of glass are produced annually in the United States. This production is divided among 243 plants located in 24 of the 48 states. To some extent the locations of glass plants are determined by the availability of cheap and usable fuel; to some extent by the availability of raw materials. The successful introduction of electric melting would tend to make location less dependent on fuel.

The consumption of electric power for glass production appears to be of the order of 500 or more kilowatt hours per ton. If all glass manufacture could be converted to electrical methods and produced with the minimum power consumption, it would require at least one and one-half billion kilowatt hours per year. Obviously the acquisition of even a small part of this business would be well worth while.

Electrical melting of glass has been attempted for at least the last fifty years. Comparatively recently several different forms of equipment have shown great promise of successful commercialization. Representative manufacturers in this country are now using electric melting in a semi-commercial way and it appears highly probable that the near future will see a very rapid development in this field.

The introduction of electrical methods opens up many new and interesting possibilities, such as the efficient operation of small glass furnaces, very rapid change from one color to another color, much more accurate temperature and flow control than is now possible, greater freedom from gas bubbles, and so on through a long list.

It is a fact that some of the glass fiber materials, such as mineral wool, are now made in electrical furnaces. Some of the recently developed glass melting furnaces promise to be particularly well adapted to the manufacture of fibrous products because of very accurate temperature control and the uniform quality of the resultant material.

Closely allied with the making of glass is the making of frit, the material which is used for vitreous enameling. This is in reality a form of glass. There is a growing tendency to convert it into a fiber from the molten state and in this way to cut down the cost of grinding to produce the frit of commerce. Here again there appears to be a promising field of wide extent for the electric glass melting furnace.

Powder Metallurgy

Manufacture of metal objects by pressing fine powders into coherent form and then sintering, with or without a final pressing, is beginning to become quite an important process. Tungsten-carbide cutting tools are made in this way. Recent developments in the application of powder metallurgy in the yellow metal and steel fields are quite promising and a few have indicated rather astounding technical and economic results.

It is as yet too early to evaluate the position of electric heating in the field of powder metallurgy. Certainly it will be used for the high temperature applications; possibly for many others. Since the process is just beginning to take on commercial proportions and since it seems destined to produce many new and useful articles and forms of material it is well worth following.

This is all in the line of review that time permits. I should like to make some remarks of a general nature before closing. They result from long experience in the applications of electricity to uses other than the production of mechanical power.

I have been associated with endeavors of this sort for over twenty years and in that time I have seen much water go over the dam. I have seen many claims

made for electrical methods which could not be substantiated later. I have seen many operations previously served by fuels electrified and later reclaimed by the vendors of fuels. But I have also seen a continuing and expanding development in the application of electrical methods and I have seen a gradual development of electrical machines and electrical processes in place of the more or less crude adaptations of electricity with which we began.

It has seemed to me that the adaptation of electricity to these non-power purposes must be regarded dynamically rather than statically. We must expect that as we forge ahead with new ideas and new developments competitive products and services will also forge ahead as a matter of business necessity. We must expect that the electrification of many applications will serve as effective spurs to produce a competitive or even a superseding fuel equipment. Thus is progress made.

As human beings we are inclined to wish for the day when that which has been sold remains permanently sold; when we can travel the even tenor of our ways without much effort. Along such lines lies stagnation, not progress. Along such lines lie poverty, starvation, dictatorship and ultimate reconstruction and revitalization. Prosperity follows progress; it is for those who are ever on their toes, who are willing to solve again tomorrow in a different way the problem they think they have solved today.

Let me urge upon you as power salesmen the necessity of viewing your field dynamically, as an ever shifting scene in which progress and prosperity for all results from an ever changing set of competitive values, which drive all concerned to continued competitive effort, not only in selling but in the development of ways and means, that is processes and equipment. Out of such efforts will come ultimately perfected fuel using and perfected electrical machines to replace some very crude present-day contraptions. And out of it will come that ever expanding industrial horizon which represents advance into things and fields as yet unknown but which are destined to produce the nurture, the livelihood and the culture for your children and your children's children.

Developing Increased Use of Electricity Among Rural Customers

(*Continued from page* 144)

wiring job for that farm on a large chart, giving the reasons for the number and location of switches, convenience outlets, circuits and size of wire. At the same time, he answers questions of farmers present relative to their wiring problems. Local contractors always are invited to these meetings. In some instances contractors have accepted the idea and established schools of their own. Many wiring schools were also conducted by Michigan State College.

I have left demonstration farms to the last because I regard them as a particularly fine example of the type of educational salesmanship needed today—salesmanship which preaches the gospel of "Electricity for Farm Profit." In cooperation with county agricultural agents and local dealers, Consumers Power Company has established eight demonstration farms in four counties. These are representative farms, operated by farmers of good standing among their neighbors. The farmer is supplied with a fair assortment of electric appliances at a wholesale price and with two years to pay. Some of the equipment is domestic, some is of the productive type.

In return for the price concessions accorded him, the farmer agrees to permit the reasonable use of his property for demonstration purposes. Sub-meters are placed on each piece of major equipment. These are read monthly by the county agricultural agent, who then is in a position to announce what any given use of electricity has cost. One county agent is mailing such information monthly to every farmer in the county.

What sort of educational salesmanship could surpass this? Here we have straightforward facts and figures proving the importance of "Electricity for Farm Profit." Facts and figures which any farmer can verify by going to the demonstration farm. There he has opportunity to see electricity at work and to learn from a fellow-farmer what it can do for him.

Supplementing the activities I have described is an advertising program conducted through the daily and weekly press, farm journals and publications of the Farm Bureau and the State Grange. The company also gives each rural customer a six-months' subscription to *Electricity on the Farm*, beginning immediately after the service contract has been signed. In most cases the first issues arrive before wiring has begun, and help sell the doctrine of adequate wiring. We are participating with other member companies of the Michigan Electric Light Association in a series of advertisements in a leading farm monthly. Hitherto the association has emphasized the dependability of rural electric service as rendered by the private utilities. Now, in recognition of the fact that load-building has become an urgent problem, the money-saving qualities of electric farming equipment are being emphasized.

Plain talk is what is needed. The farmer has no time for pretty words. He wants to know what electricity will do for him, how much it will cost, and whether the net result for him will be fewer dollars or more dollars. Let's make no secret about the right answer. Let's tell him definitely that it will be more dollars, and let's repeat it so often and from so many angles—always supporting our statements with proof—that there won't be any more doubt about the value of electricity on the farm than there is about the value of sunshine.

Progress is being made. The farm use trend is upward. But you can't knock off work when the harvest is half in the barn. You must spit on your hands and work harder. You have heard how the rhythmic repetition of a phrase steels the muscles of the Volga boatmen. In our case I again suggest the slogan, "Electricity for Farm Profit."

Nela Park to Celebrate 25th Anniversary

PLANS for the celebration of the 25th anniversary of the opening of Nela Park, often referred to as "America's most beautiful industrial property," have been announced by J. E. Kewley, Vice-president in Charge of the Incandescent Lamp Department of General Electric Company.

The celebration will extend from April 18, twenty-five years from the date on which Nela Park was officially opened, to Oct. 21, the 59th anniversary of the invention of Edison's first practical incandescent lamp, which gave point and promise to the original Edison Electric Light Company, direct forerunner of the present General Electric Company, whose financial and moral support in the early days of the National Electric Lamp Company made Nela Park possible.

Package Diesel Units and Their Future

By R. K. Evans

Vice-President, General Motors Corp., Detroit, Mich.

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

THE subject, "Package Diesel Units and Their Future," might seem to offer unlimited possibilities for a long and, perhaps, interesting paper. But in dealing with this particular subject, I believe that there are more than the usual reasons for viewing the future with conservatism and caution. Too much publicity has already been given to predictions as to the revolutionary changes which Diesel engines are going to bring in all fields of power. Unless a more conservative attitude is adopted, there is a likelihood that the public will be sadly disappointed with the eventual actual accomplishments.

Unfortunately, there are some popular misconceptions in the minds of the public regarding Diesel engines. The Diesel industry is not entirely responsible for these. For some unknown reason many people seem to believe that Diesel means almost the next thing to perpetual motion and because it is always the policy of the press to give space to the things which the public likes to read about, an unusual amount of publicity has been given to Diesel activities. Not all such publicity has been misleading. For instance, the performance and economies of Diesel locomotives, both in switcher service and in hauling high-speed trains, are quite as amazing as it has been claimed. For many people the business of railroading still has a strong romantic appeal and these new style trains have deservedly caught the fancy of the American public.

For buses and heavy trucks, Diesels also offer important operating economies. In fact, almost any kind of heavily-loaded work machinery now powered by gasoline engines can profitably change over to Diesel. But Diesel engines are not, and probably never will be, as cheap to build as gasoline engines.

The higher efficiency of the Diesel engine, as compared to other internal combustion engines, is attained through the use of higher pressures in the combustion chamber. These higher pressures result in higher stresses on all working parts thus requiring better or more materials. Complete and efficient burning of Diesel fuel—at the right time and in the desired quantity—is dependent on the injection system. While this system is not very complicated, it requires a very high order of workmanship and most painstaking physical and metallurgical controls. Injectors must work at pressures not only high enough to overcome pressure generated in the combustion chamber but much higher in order to break the fuel up into a very fine mist so as to insure rapidly progressive and complete combustion.

MR. EVANS

The economy of Diesel engines, in relation to gasoline engines, is entirely dependent upon using lesser quantities of a cheaper fuel. To justify the higher first cost, they must be worked hard and constantly. But they are still only man-made machines, subject to unavoidable wear and occasional unanticipated failures or breakages. They still require a certain amount of skilled care in their operation and maintenance. Exhausts are noisy but can be reasonably well silenced at additional cost. Even the strongest advocate of the Diesel engine must admit that engineering principles have not yet been so changed that we can get something for nothing.

General Motors activity in the Diesel field is a most natural one. We are engaged principally in the engineering and manufacturing of transportation equipment.

In 1930, we acquired the Winton Engine Company, in order to secure an experienced manufacturing, sales, and service organization through which we might test out in the field certain engineering developments of General Motors Research Laboratories. A short time later, largely because of its long association with Winton, we acquired The Electro-Motive Corporation. The latter company had, for a number of years, been building gas-electric rail cars, and had used Winton engines exclusively.

The first product resulting from this combination of activities was a high-speed, two-cycle, solid injection Diesel engine, having an output of approximately 75 hp. per cylinder and shown for the first time in the General Motors Exhibit at the Chicago World's Fair in 1933. Uses for this engine developed almost immediately. The U. S. Navy adopted it as propelling power in certain classes of vessels and two different railroad systems encouraged experimental work with the engine as motive power in high speed trains. The latter work resulted so successfully that a considerable number of high-power, high-speed passenger locomotives have been built in rapid succession. During this same period, use of the engine in switching locomotives was developed and a considerable number of these units have been built.

During 1936 and 1937, practically the entire manufacturing capacity of the Winton Engine Company has been occupied in the production of these engines, for locomotives and for marine installations. It became obvious that the potential market for this type of engine justified the provision of better manufacturing facilities of larger capacity. Accordingly, a new engine plant has been constructed and equipped at La-Grange adjacent to the locomotive plant of Electro-Motive Corporation. The first objective of this plant is to provide engines for locomotives but since a very large investment had to be made and, as considerable capacity is available, we

are interested in selling these engines in any service to which they are suited.

Please get this part of the picture straight. The Cleveland Winton plant is, and has been for years, a job shop capable of building almost any type of engine, large or small, in small quantities, whereas the new LaGrange plant is highly tooled for quantity production of one design and size of engine only. Minimum tooling of this sort unavoidably results in comparatively large capacity.

Another area of the transportation field in which General Motors is interested, is that of trucks and buses. During the past few years, there has been considerable progress in the development of lighter weight, higher speed Diesel engines in sizes suitable to commercial road vehicles. I know I do not need to explain to this group the sound reasons for the demand from truck and bus operators for this type of power. General Motors research engineers have been working on this size engine for a number of years. With all the engineering work which had already been done by others, it was not a difficult job to build an engine which performed quite satisfactorily and was efficient. But we had to build it small enough, light enough, cheap enough, and reliable and durable enough so that it could go out and replace the highly developed gasoline engine in all kinds of services. We did not hurry this work for the reason that we would not experiment on the public and we preferred to let the market demand develop to the point where it would support quantity production tooling rather than try to start production on too small a volume. A year ago, we decided that action could no longer be deferred as some of our important customers were becoming very insistent in their demands. Accordingly, a plant has been built and equipped at Detroit for the manufacture of a line of small Diesel engines.

With production plans completed for commercial vehicle engines and for locomotive engines, we had our Cleveland factory still available for such special work as it had been doing in the past but we could not hope to keep it fully occupied on this work alone. As it is quite a big jump from vehicle to locomotive engine sizes, and, as there is quite a large, although scattered, demand for a medium size engine, we decided to fill out our line by providing a third series of engine to be manufactured at Cleveland.

A recapitulation of this manufacturing program is as follows: (Remember that ratings vary somewhat, dependent upon application.)

Detroit Plant—Small series, maximum rating 25 hp per cylinder, at 2000 rpm, 3, 4 and 6 cylinder line engines designed primarily for trucks and buses.

Cleveland Plant—Intermediate series, continuous rating 50 hp per cylinder at 1200 rpm, 4, 6 and 8 cylinder line engines designed for marine and stationary service.

La Grange, Illinois, Plant—Large series, maximum rating 100 hp per cylinder, at 800 rpm, 6, 8, 12 and 16 cylinder V-engine designed for locomotive and marine applications.

As has been shown, the larger and smaller series of engines were required primarily for power plants in transportation units manufactured by the Corporation. The intermediate series were designed primarily to continue the marine business in which Winton has for many years been actve. Had we designed any of these engines only for stationary power plants, it is probable that we would have selected larger and fewer cylinders to attain desired increments of power. But it does not follow that the latter course would have resulted in lower costs or more satisfactory engines. Because our plans permit the production of standardized units in considerable volume, very favorable costs can be secured. Manufacturing processes which would otherwise be impossible can be adopted thereby favorably influencing quality as well as cost. It is commonly accepted manufacturing knowledge that the highest degree of perfection is attained through repetition and the tooling which accompanies such manufacturing. Up to the present time, there has been little opportunity for the application of such methods in the manufacture of Diesel engines.

As our plans progressed, it became apparent that all of these engine sizes could be useful for many different kinds of work. Manufacturers of many different kinds of machinery approached us asking us whether or not we would be willing to sell engines to them or use with their products. The list includes manufacturers of excavating equipment, tractors, mining, oil-field, logging, and many other kinds of machinery.

As the result of many inquiries from both manufacturers and consumers for a very small engine, a single cylinder unit was added to the small series. It is already obvious that we shall eventually have to provide a two cylinder in this line.

The possibility of using the large engines in stationary power plants resulted in the addition of 2 and 4 cylinder engines in that line.

The demand for portable power units for many different kinds of work resulted in the plan for producing "Packaged Power." The units, (not an original idea of General Motors), consist of an engine mounted on a suitable base, complete with cooling system, fuel, tank, starting equipment, and control panel, and will be supplied with either clutch and outboard shaft for pulley drives or with direct connected generators.

This method of making up assemblies appears to be a very desirable way of supplying plants intended for stationary as well as for portable use. The plan applies only to the small engine series. For continuous loads, they are rated at 15 hp per cylinder at 1200 rpm. The multiple cylinder engines have a maximum rating of 25 hp per cylinder at 2000 rpm.

Price is perhaps the greatest factor in their sales potential. Contrary to many unauthorized statements, their prices, although favorable, will not be revolutionarily low.

Questions which you might naturally ask are—"Where will they be sold and how will they affect our business?" Briefly, our opinion is that generally where electrical power from central stations is available, at a reasonable rate, there will be little market for Diesel Packaged Power in stationary installations. There are exceptions to this statement. For instance, following the disastrous floods in the Ohio River Valley last year, Diesel manufacturers received large numbers of inquiries for small engine-generator sets as emergency standby units. In many cases, the size units required were only large enough to maintain essential services. Such equipment is desirable for all isolated power plants and, in some cases, is required by law.

Temporarily located equipment, such as contractors' pumps, compressors, hoists, etc., can use Diesels either direct-connected or with electric transmissions. There are many small gasoline engine-generator sets which can be changed over to Diesel with substantial savings in operating costs. But the big market for this equipment lies outside the areas supplied by central power plants or

(*Continued on page* 182)

Selling The Profitable Load

By H. C. Thuerk
The Utility Management Corp., New York City

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

As a basis for discussing this subject with you today, I would like to review briefly some significant observations made last Fall by Mr. William M. Carpenter, Economist of the Edison Electric Institute. Mr. Carpenter pointed out that although gross revenues of the electric light and power industry in 1936 were almost identical with 1931, operating income was 15 per cent less and net income, after all charges, was 24 per cent less. This meant that the former proportion of gross revenue was no longer being translated into net income and raised the question as to whether the industry is approaching or has reached the point where increases in business are unlikely to produce sufficient revenue to carry the additional necessary investment.

Up to 1933 the ratio of net to gross was fairly satisfactory, but since 1933 when the first upward surge of costs took place there has been a marked reversal in the relation of the amount of business done and the profits arising from doing this business. In this same period, while operating expenses and taxes were mounting the industry has had to absorb almost continual rate reductions. It is significant to note that in 1937 for the first time tax payments by the industry exceeded the entire interest requirements on the six and one-half billion dollars of outstanding bonds.

At about the same time these observations were made, the American Business curve apparently became fatigued from an upward climb from the dark days of 1932 and proceeded to come down at an almost precipitous rate.

The net effect of this descent brought the Federal Reserve Board's Index of Industrial Production from 118 in August, 1937, to 79 in February, 1938, and in all probability the Index will be even lower in March. Gross revenues of the industry reflected this drop in industrial production so that today we face not only the problem of a marked decline in the rate of return on investment required for new business, but also

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the problem of a trend toward decreasing volume of our present business.

We have analyzed the operating companies of our own System and found that in the twelve months' period ending June, 1937, we expended $2.33 in electric construction for every dollar of increased gross revenue. The amount of money spent for electric construction for each one dollar increase in gross revenue varied among the companies from 71c to $6.49. In the calendar year of 1937 we found that the ratios had increased and in that year for the System we spent $2.90 in electric construction for every dollar of increased gross revenue. The individual companies of the System spent from 86c to $7.48 for every dollar of increased gross revenue. In fact, one company showed a ratio of $24.40 brought about through the effect of a rather substantial rate reduction. These ratios, of themselves, are not alarming but when the analysis is extended to produce ratios of electric construction expenditures to the net revenues available from the increased gross, then the picture is disturbing. In many instances we find that while gross revenues have increased, net revenues have not increased proportionately and in many companies have actually declined (see Chart I).

Practically all lines of industry and trade have been affected similarly, yet because of the inherent characteristics of our industry our problem might seem much more difficult to solve. The iron and steel industry, for instance, turns its capital over approximately once in every three years, the petroleum industry in from one to three years and the automobile industry in approximately one year. These rates of turnover, of course, represent average conditions and actually vary from year to year, depending upon actual production. On the other hand, we turn our capital over but once in from five to seven years.

The wholesale and retail distribution systems of many national manufacturers are flexible in their nature and represent a comparatively small investment with the result that certain parts of them can be liquidated easily and with comparatively little loss whenever it is evident that unprofitable sales are resulting in a particular area. Our capital investments in distribution facilities are almost entirely of a nature that once made it is possible to eliminate parts of them only at great loss. In addition, our business is of such a nature that through franchises we are obligated to continue selling our service in many areas where the business available does not justify the distribution facilities.

An analysis of all these factors, which have come to influence our industry so materially, brings us to the thought that at least part of the solution of the problem lies in selling additional business in such a manner as to keep to a minimum increases in the requirement for new investment and thus keep our fixed charges down. To carry this out will require the focusing of load-building activities on physical facilities where additional loads can be added with little or no expenditure for new construction. At this stage in the experience of our industry such loads will for the greater part be the most profitable ones.

To obtain this profitable business where little new construction expense is needed will require a much greater

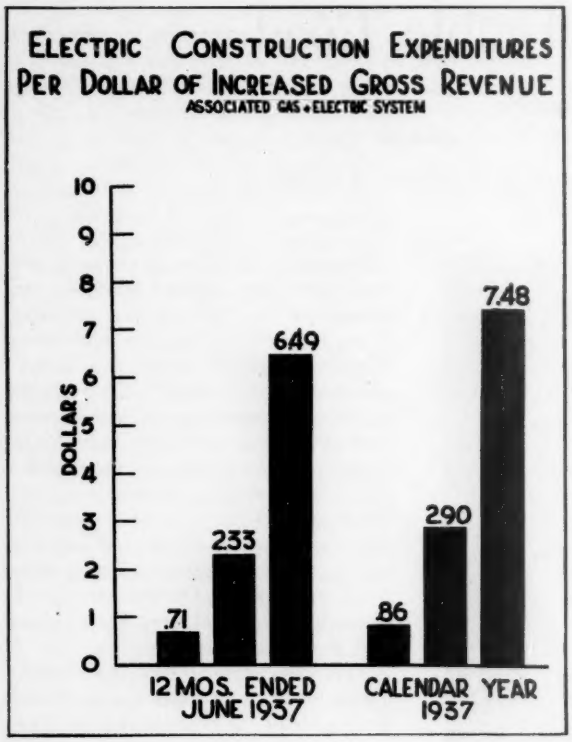


Chart I

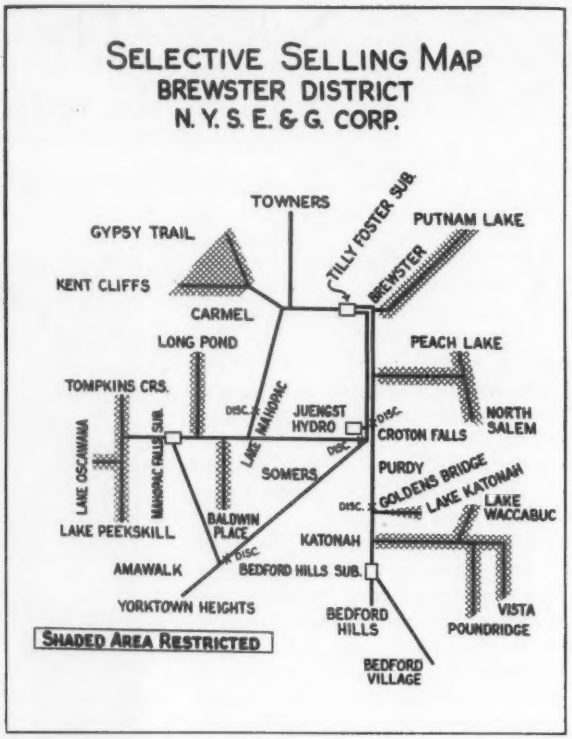


Chart II

control of our sales efforts than we have ever exercised before. These sales efforts should be concentrated to a marked degree on physical facilities where we have surplus capacity available and to the sale on our loaded facilities of those types of business which are off-peak in relation to the present peak demands on the loaded facilities. For many years all of us have practiced this type of selective selling of industrial business because of the higher investments required to serve these large blocks of power and, to some extent, in obtaining the larger commercial loads. Now it seems desirable to extend this same type of selective selling to all classes of customers.

It would be relatively easy to obtain this type of sales control if all load building activities were carried on only by the sales organizations of the utility companies. However, this is not the case for as we all know a proportion of our domestic, commercial and industrial business is placed on our lines through other retail outlets. The problem of controlling residential load building requires particularly careful analysis and study where the utility is entirely out of the merchandising business.

In one of the Divisions of the New York State Electric & Gas Corporation, a particular effort has been made to develop a selective selling plan designed to obtain that profitable load which will bring the most net revenue. The detailed engineering analysis and load-building study being made by this division will probably be more extensive than would be justified in many operating companies. However, we have felt it desirable to do so in order that we may be in the position of presenting to the operating companies of our System a complete picture of the possibilities of profitable business through selective selling.

This particular division buys practically all of its power and distributes it through transmission lines to seven substations. There are approximately 12,000 meters in the area and the peak load is approximately 5500 kw.

The first step that was taken was to determine as quickly as possible which facilities were at the present time well loaded and which would require considerable additional expenditures if additional load was sold on them. This was done in order to eliminate such facilities as quickly as possible from sales efforts by the company's own sales organization on new loads which affected the peaks on those facilities.

Three of the substations were found to be loaded or overloaded and another, although it had some excess capacity, was in such a location that any additional peak loading placed on it would result in voltage troubles at the other three substations just referred to and thus necessitate expenditures for improved facilities. It was therefore decided that sales efforts on facilities emanating from these four substations should be restricted to strictly off-peak loads.

The remaining three substations were found to have surplus peak capacity. The primary circuits coming out of these three substations were then analyzed for capacity and a diagram prepared showing which portions of these circuits were at present loaded or would become loaded within the next twelve months without any direct sales efforts on the part of our own sales department. A memorandum was also prepared describing the geographic limits of these loaded sections and the diagram and memorandum given to the sales department for use in preparing a selective selling program. The result of this initial study was to limit sales efforts to approximately 40 per cent of all the customers in the division to the promotion of off-peak loads as it was recognized that on-peak load added in

this area would require considerable additional investment in distribution facilities (Chart II).

Maps covering the area served by these three substations were prepared for each salesman and on them were indicated the geographic areas served by the loaded facilities. The salesmen were then instructed, pending determination of the types of loads which would be distinctly off-peak on the loaded facilities, to confine their selling efforts to the remaining areas in their respective territories. These maps were given to the four domestic salesmen, the commercial salesman, and the combination industrial and street lighting representative.

Through the meter readers, a customer appliance survey is being made of the residential customers in the division. The completed survey cards will be divided into two groups, one containing the approximately 40 per cent of the customers to whom off-peak loads should be sold and the other, those customers to whom both on-peak and off-peak loads can be sold. Thus these cards will assure selective selling as the salesmen will know from the cards assigned them the types of load which can be sold. In addition, an analysis of the survey cards will indicate the market for the sale of additional appliances in this area.

The engineering department is continuing its study of physical facilities in the on-peak selling area in order to determine which of the larger distribution transformers and secondaries are loaded at the present time. Where such loaded transformers have been found, the engineering department has notified the sales department, giving a geographic description of the secondaries and the folio numbers of the customers served. The survey cards of these customers would then be removed from the on-peak file and placed with the off-peak group.

You will note from these preliminary steps in the preparation of a selective selling program that the first objective was as quickly as possible to divert the sales efforts of all salesmen away from the areas where it was known that facilities were well loaded. This procedure, however, was followed only to be able to determine the remaining areas where concentrated sales promotion would result in obtaining load with comparatively little new investment. After this had been done, the next task that was undertaken was to determine what classes of business should be promoted both on loaded and unloaded facilities in order to produce the greatest amount of profit. To accomplish this, of course, required a study of the division load curve and the load curves of the individual substations and primary circuits, together with the characteristic load curves of the various appliances and loads.

An analysis of the division load curves showed that the division load did not vary much from about 8 a.m. to 4:30 p.m. when the load increased rapidly to its peak. These peaks all occurred after 5:30 p.m. throughout the year, so it was evident that daytime load could be added without affecting the purchase or substation peaks. From this, it was recognized that home lighting, outdoor lighting and lighting of those commercial establishments regularly open at night were definitely on-peak loads, but that daytime industrial loads, the loads of commercial establishments open only in the daytime and water heating represented in this instance off-peak loads, and consequently could be classed as profitable business.

The operating group, of which this division is a part, has recently completed a very complete survey of all industrial prospects. The completed survey covers data on approximately 200 establishments having a total prospective load of 20,000 kw and an estimated annual revenue of $513,000. Separate survey sheets on power, heat and lighting requirements have been prepared for each prospect in sufficient detail that the prospective load can be readily classified as to load characteristics, nature of business, investment required to serve, estimated revenue and other items which the industrial salesman requires for intelligent selection of good profitable prospects.

The industrial survey for this division is now being analyzed first of all to determine which prospects have loads which are confined to day hours and which require little additional investment to serve. Complete data are being compiled on these prospects to show the amount of net revenue which would result from each load and then from this data determine which prospects should be actively solicited. Such a study may reveal that certain daytime industrial loads can be taken on even in the areas where facilities are now well loaded.

The profit possibilities of the various types of residential and commercial business are likewise being studied, with particular attention being given to the electric range load. The division load curves are being studied in their relation to distribution demands from range users to determine the effect of the cooking load on substation and purchased peaks. An analysis is being made of the increment investment cost to serve ranges installed in the selling area last year. From these studies it is hoped that a clear picture will be available of the profit opportunities from the range load in this particular division.

This briefly describes our efforts to concentrate more intensively than ever before on the obtaining of the most profitable new business available.

It is our feeling that a selective selling program, based on a careful analysis of physical facilities and carried out by a closely supervised sales activity, will result in the following accomplishments:

Minimum investment
Increased net income
Fewer service complaints
Lower service costs
More efficient sales efforts

To work out an effective program of selective selling requires the close cooperation of our engineering, operating, accounting and sales departments. The preparation of such a plan offers an unusual opportunity to our engineers and salesmen alike to demonstrate their ability in the solution of a problem so vital to the continued progress of our industry.

Southeastern Meter Short Course

The Annual Short Course and Conference on Electric Meters and Relays will be conducted May 23-27 inclusive, by the College of Engineering, University of Florida, Gainesville, Fla., in conjunction with the Southeastern Metermen's Association. Utilities and Municipalities of the southeast expect this conference to be most instructive and beneficial, especially at such a time when practical operating problems must be solved as efficiently as possible. New technical developments and the increasing exacting demands of the industry present problems of great importance to the practical meterman and relay operator. The major part of the discussion will be devoted to analysis and solution of these problems.

Information about the course and program may be obtained from Dean Joseph Weil, College of Engineering, University of Florida, Gainesville, Fla.

Fourteen Years in the Electric Light and Power Business

By C. J. Strike

President, Northwestern Public Service, Huron, S. D.

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

AS WE PASS through the experiences of the business world, we are prone to believe that our problems are more difficult than those who have preceded us. History, however, teaches us that from the beginning of time men and women have experienced a constantly recurring cycle of Feast or Famine, Profits or Losses, Prosperity or Depression, and now more dignifiedly expressed as "The More Abundant Life and Recession." That such was the experience of our predecessors is evidenced by Chart I.

Note that for the past 82 years (the period of the Chart), there has been a constant recurrence of this business cycle, with one significant point, that after each successive cycle, business emerged to a higher level than it had ever before attained.

If we were to analyze each of these cycles, we would find that there were many who wished to take credit for the periods of Prosperity, but none who assumed responsibility for the periods of Depression. During normal times we hear little or no criticism and the various phases of Industry, Business and Political life mesh smoothly together. Because each of us individually, is prompted by the desire for personal gain, and because we live under a true Democratic Government where men and women are privileged to do as their conscience dictates, we find each of us endeavoring to operate our individual business or profession in maximum production with the eventual result that the ratio of "Production and Consumption" and "Supply and Demand" get out of balance, then chaos and disorder is the result.

During the periods of readjustment, we witness the sad experiences of life and many of us become viciously critical and endeavor to lay the blame for all of our misfortunes at the other fellows' door. Such periods might well be termed "A Period of the Survival of the Fittest" for when the readjustment has taken place, about the only difference observed is, new faces in the business and political world.

MR. STRIKE

It is truly the Great American Game and it is under this system that we have built the greatest nation on earth. A nation whose people receive the highest wages and enjoy the most luxuries and recreation. It is, of course, the desire of every conscientious executive, business or political leader, to level off the hills of prosperity and fill up the valleys of depression, or as some might state it "Have a Planned Economy." In spite of such a noble ambition, future history will reflect these same recurring business cycles, and at best, the reforming of a free people will only be successful by degrees.

It is the responsibility of our lawmakers to see that the rules of business and society are equitable. It is the responsibility of the individual, and particularly, those charged with the responsibility of management, to conduct their affairs and business in accordance with the adopted rules. It is the responsibility of Government to maintain the position of an "Umpire" to see that the rules are equitable, and further, to see that they are adhered to.

Prior to the World War, the unbalanced business conditions were largely traceable to the problems brought about by over-aggressiveness, and frequently, the greed, of people making up the Business, Professional and Social world. Because there were no major economic questions involved, the periods of readjustment were usually of short duration.

For the past several years we have witnessed an unbalanced business condition, caused not alone by the greed and aggressiveness of individuals, but by the abnormal conditions attained during and immediately following the World War. During this period, Agriculture, Industry and Business in this country were stepped up sharply to supply an abnormal export market. These conditions brought about unusual expansion together with its accompanying prosperity, with the result that we established a standard of living far above that which our normal business could have supported.

Suddenly the War was over, foreign countries promptly reentered the World Market competitively, and partially, at least, we in this country were driven back into our own backyard. The effect nationally was exactly the same as our individual experience when our salary or gross income is sharply reduced. One of two alternatives immediately confront us—i.e.: either immediately adjust "Outgo" to "Income" or face the financial embarrassments which are sure to follow.

Agriculture was the first to suffer the effect of this changed condition for two reasons:

1st. Agriculture was never soundly and adequately financed, consequently, there were no reserves available to enable that industry to carry on. It had been encouraged to expand under a most liberal credit policy on a short term basis, which loaning policy was suddenly reversed and forced liquidation resulted in the so-called depression of 1921.

2nd. Because the prices of most agricultural products were on a world market basis, and because we were an export nation, Agriculture could not secure benefits under a protective tariff, as was the case in most of our other industries.

Thus, we found the American farmer adjusted to an abnormal export basis and a study of the situation reveals that our Agricultural people in this country have never to this day recovered from the loss of this abnormal market. Further, Agriculture has never taken its readjustment back to a normal domestic consumption basis.

In my opinion, it is a physical impossibility for our American agricultural people living under American standards to compete on a world market against foreign competitors living under foreign standards, much below those attained in this country. The Agricultural problem is still with us and if we wish our Agricultural people to live under the American standards, then our business and professional people must voluntarily agree to pay Agriculture a premium on domestic consumption sufficient to cover the difference of living costs in this country, as compared to those of their foreign competitors.

When the business and professional people recognize this responsibility, then Agriculture will adjust itself to a domestic consumption basis, selling its surpluses on the world market. In my opinion, we should determine, by the various Governmental indexes, the advantage that Industry and Business in this country enjoy over foreign competitors by reason of the Protective Tariff. This same advantage should be passed on to our agricultural people in some form of tax on domestic consumption over foreign markets, which would guarantee the same standard of living for our agricultural people as enjoyed by Industry and Business. Under such a plan if our Agricultural people saw fit to over-produce, thereby driving down the world market, then that would be a problem of their own making. If, on the other hand, they, like Industry and Business, adjusted Production to normal consumption, then they would enjoy the benefits of such a well-managed balanced program.

Here again, it would be a physical impossibility to attain a perpetual planned economy, for no individual or group of men would be capable of estimating the conditions to be encountered. The cycle of agriculture, the same as the cycle of Industry and Business, will always reflect the periods of prosperity and depression and practical people will only attempt to accomplish orderly readjustments when the unbalanced condition attains.

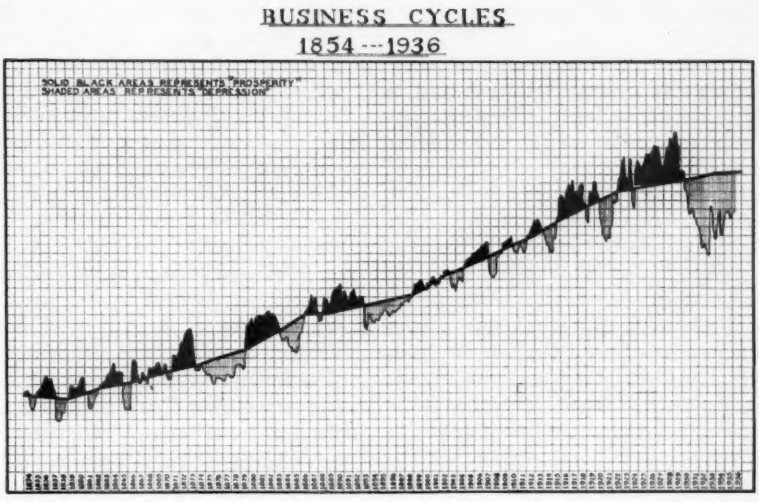


Chart I—Business Cycles, 1854-1936

Agricultural leaders have been fond of reminding business of its dependence upon a prosperous agricultural condition. This, no doubt is correct. On the other hand Agriculture can not continually prosper unless Industry and Business is able to support the customers in their ability to purchase agricultural products.

Various methods of subsidy have been experimented with in an endeavor to correct the Agricultural problem. In my opinion, it will be disposed of on an economic and equitable basis, *only* when Business, Professional and Agricultural leaders sit across the table and work out their mutual problems.

While Agriculture was struggling through the period of readjustment, Industry and Business was doing likewise with this significant difference, i.e.: Industry and Business in the aggregate, had adequate reserves, designed if you please, to carry them through a normal period of readjustment. Because the Agricultural problem was still with us with its accompanying decreased purchasing power of agricultural people, and because reserves of Industry and Business were rapidly depleting, we encountered the experience of 1929 to 1932 unfairly referred to as the "Hoover Depression."

The philosophy of 1933 was an objective of rapidly speeding up Industry and Business by a large scale program of Public Works, financed from the Federal Treasury in an effort to support the abnormal standards developed during and immediately following the World War.

Such a program might have accomplished its purpose if Government had followed out its original theory of "Running Interference," so to speak, for Industry and Business. Instead the program was designed by theorists. Industry and Business were stepped up substantially above the normal markets of consumption and demand and we find "The Interference" (Government) way out ahead of the "Ball Carrier"—(Industry and Business). In fact, there is every evidence that The Interference was attempting to carry the ball itself.

The result was automatic, i.e.: an abnormal business condition created by large scale Government spending and when Government spending was sharply reduced, we find industry and business again confronted with the necessity of adjusting itself to normal business markets.

Thus, we find ourselves entering 1938 with an unbalanced agricultural condition and an unbalanced condition in Industry and Business.

The balance between Production and Consumption in all industries, the same as water, must seek its level and any artificial method of stepping up Consumption to meet Production or stepping down Production to meet Consumption, is a most delicate operation and has never been successfully accomplished,

without destroying the liberties of a free people.

It is these extremes which so viciously challenge the human relations between the three principals of the business world, i.e.: the Investors, the Employees and the Public.

Unfortunately, during such periods of readjustments, we are confronted with the "Demagogues" who prey on the prejudices of either class, thereby increasing the problems involved.

I believe there is one common criticism of Industry and Business, i.e.: that the leaders have not recognized their responsibility in the orderly solution of the Agricultural problem. Likewise, I believe that it is a justified criticism of agricultural leaders, that they, in turn, have not recognized the problems of Industry and Business. If the problems are to be solved on an economic basis, then they must be mutually approached on a "Live and Let-Live Principle."

Until these groups can be brought together in an orderly study of mutual problems, we will find these economic questions in the political arena—a place where nothing was ever decided on its economics.

As previously pointed out, during times of adversity, it is the Great American Game to find someone around whose neck the problems can be hung and thus, today, the leaders of Industry and Business find themselves viciously challenged, as the contributing factor in the present so-called "Recession."

Business, both big and little, rightfully is controlled by those people who have their money invested in the business. It makes no difference whether it is one individual, a partnership or a corporation. The situation remains the same.

In the conduct of any business, management must assume responsibility for the adoption of policies, rules and regulations which will insure equity between the three principals involved, i.e.—the Investors, the Employees and the Public.

It is not sufficient to have such equitable policies, management must go further and convince the principals that they have been fairly and equitably dealt with.

During the past few years we have seen the Electric Light and Power Industry dragged into the political arena and used as an issue to ride politicians into office and retain them there. The electric light and power business is recognized as a "natural monopoly" and as such, in the interest of equity, should be subject to rigid regulation. Without question, laws governing the industry in the past have not been adequate to control such a rapidly growing industry. Possibly they were adequate when the electric service company was strictly a local concern, furnishing only light and incidental power service in one small concentrated area.

I am firmly of the opinion that had the rules, regulations and laws preceded the rapid development of the industry, then many of the problems we have experienced would have been avoided.

No industry has experienced such rapid development as has the electric light and power industry, with the constant changes and developments in the art of manufacture, transmission and distribution of electrical energy. It seems to me, that we are subject to only one common criticism, i.e., that the industry failed to keep the public informed as to the advisability and economics surrounding the various changes which have taken place.

Responsibility for such misunderstandings must rest partially, at least, with those in charge of the industry. Responsibility for inadequate laws, must, in part at least, rest with those individuals who were responsible for law making during the past twenty years. Thus, does it not logically follow, that Government officials must assume some responsibility for the policies and practices they now so viciously criticize?

The Demagogue says that regulation has failed and that the utilities have corrupted politics. One of our company attorneys very aptly stated the case when he said—"The Utilities, like every other business institution, deal with the various branches of Government as they exist. If they find corruption, they are obliged to deal with the situation as they find it."

Every major industry in its turn has found itself in the political arena. When the issue ceases to have public interest, then, and not until then, is it dropped from the political portfolio and disposed of on its merits and economics. It seems to me that the present electric light and power controversy is a definite challenge to the leaders of both the Industry and the Government, and it is their mutual responsibility to correct any abuses which may exist to the end that the public will receive reliable service at the lowest possible cost consistent therewith without destroying the profit system. Surely no fair-minded individual will believe that the problem can be equitably disposed of by using the taxpayers' money to enter into direct competition with a tax-paying industry.

Northwestern Public Service Company was organized in December of 1923, to establish as inter-connected electric light and power system in central South Dakota and western Nebraska. The original theory being, to take the benefits of "Diversity and Mass Production" and thereby expand the electric service to cover the entire area. The venture to be carried on by private capital with two aims in view, i.e.—"A Fair Profit On The Capital Invested," and "The Bringing of 24-hour per day Electric Service" to as many communities and people as possible.

The years of 1924 to 1926, both inclusive, constituted largely a period of acquisition during which period we purchased some properties outright from both municipal and private operators, and others were constructed new. The properties acquired were largely isolated plants serving local communities and the rates were based upon the respective investments, and operating costs as they existed at that time. None of those owners were accused of being "Economic Royalists" and their record is one of a struggle for existence and a struggle for new capital to meet the constant expansion of service demanded by the public.

From this humble beginning Northwestern Public Service Company embarked on its development program. To accomplish this program new capital was required, likewise, labor, not only for the construction period, but to carry on the operations of rendering electric service. The objective of both capital and labor was to build and operate a property to bring an increased use of electric service to the greatest number of people at the lowest possible cost consistent therewith.

Fourteen years have elapsed since the incorporation of our company and we have lived through two distinct periods of prosperity and depression. Coupled with this, the territory we are privileged to serve has experienced seven years of unprecedented drouth. Surely the path has been rough and rugged and the problems have been a constant challenge to Management.

Some individuals endeavoring to solve the problems of the "Present Recession," after flitting from one branch to another, have now challenged so-called "Big Business" as being responsible by the establishment of policies and regu-

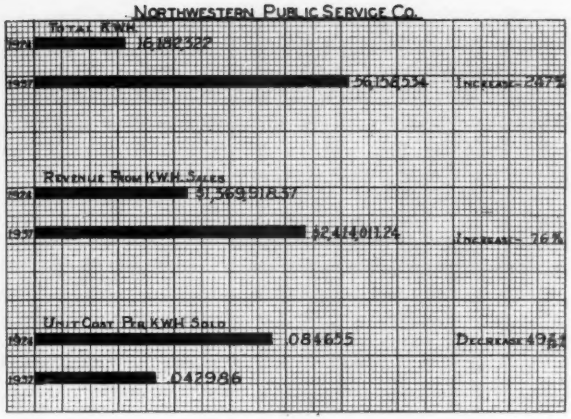


Chart II

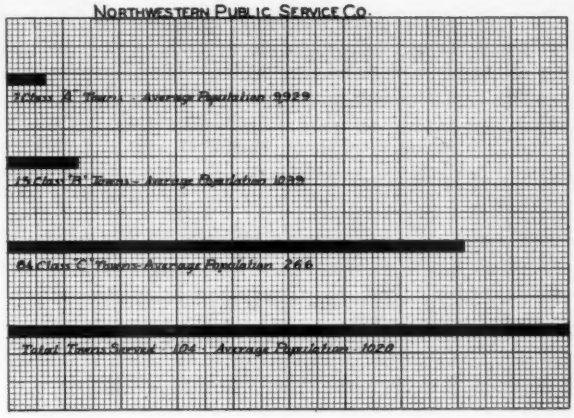

NORTHWESTERN PUBLIC SERVICE CO.
7 Class "A" Towns - Average Population 9929
13 Class "B" Towns - Average Population 1039
84 Class "C" Towns - Average Population 266
Total Towns Served 104 - Average Population 1020

Chart III

lations which were not equitable between the three principals involved, i.e., the Investors, the Employees and the Public.

Without question, the electric light and power industry, through acts of both Omission and Commission, has been responsible for its share of mistakes. We know of no business whose operations could be classed as perfect. On the other hand, we, in the electric light and power business, believe that when placed on the scales of equity and honestly weighed, we will not be found wanting, or in an embarrassing position.

The logical question confronting the management of our Company is "Has the conduct of our business been commendable?" "Have we dealt fairly with the three principals involved?" These questions can only be answered by a review of the record, which I would like to present to you at this time.

FROM THE VIEWPOINT OF THE PUBLIC

Chart II shows graphically the trend of our electric business during the fourteen-year period.

During this period we expanded our system from one serving 42 communities to a system serving 104 communities. Many of these communities could never have enjoyed twenty-four-hour per day electric light and power service, except through the facilities of such an interconnected transmission line system.

We believe that the wisdom of the policies established in 1924 and the program followed during the interim, of constantly expanding electric service to more communities and more people, is completely vindicated by the philosophy of the Federal Government today, in its endeavor to see that adequate reliable and economical electric service is extended to the greatest number of people.

This can only be accomplished by a transmission line system following the course laid out by this industry twenty years ago and the policy of The Federal Government fostering municipal ownership for isolated communities by Federal gift and grant, is a direct challenge to the fundamental principles of serving a territory from large generating stations through the medium of an interconnected transmission line system.

When the Federal Government by Gift and Grant, fosters a movement to take the larger communities off the transmission line system and establish them as isolated plants, they are undermining the only principle which can meet their philosophy of "Electric Service for all including the Farm and Rural Community." The small towns and rural areas must be given the benefits of an existing utility in the larger communities if the business is to be operated on an economic basis.

We believe that our accomplishment during the fourteen-year period is commendable instead of being subject to criticism, as we now witness during the present light and power controversy.

Note that in 1937 we furnished our customers with 247 per cent more electric service than in 1924. For this additional service we received an additional income of only 76 per cent. This condition is the result of the numerous voluntary rate reductions made during the fourteen-year period, with the result that the average rates charged by our company for all classes of electric service in 1937 was 49.2 per cent less than the average rate charged in 1924.

In other words, during this fourteen-year period, we effected a reduction of rates approximating 50 per cent below the rates charged by our predecessors, when the electric light and power business was a local concern in the category of a "local business establishment."

There may be those who believe that an average rate of .0429 per kilowatt hour is too high, yet figures, like any other conclusion, only mean something by comparison. If one will study the territory served by our company you will find that it consists largely of small towns, the size, number and average population being reflected in Chart III.

Note that only seven of the 104 towns have an average population approximating 10,000 people. Note further that only 13 have an average population approximating 1,100 people. Note further, that 84 of these communities have an average population of only 266 people and that the grand total average of the one hundred and four communities is only 1,020 people.

To serve these communities requires not only power plants and distribution systems, but approximately 1,400 miles of high voltage transmission line. Thus, it is self-evident that a considerably higher investment is required to serve our customers than if they were located in one community of approximately 100,000 population.

Coupled with the fundamental problem of serving a population of 100,000 people in 104 separate communities, the effects of continued drouth very seriously reduced the income of our people.

While, you, no doubt, have read much about the drouth in the two Dakotas, yet few people appreciate the effect of such a catastrophe on the cash income of a territory. Chart IV reflects the cash income from farm production in the two Dakotas for the years 1929 to 1935.

Note that the cash income in 1929

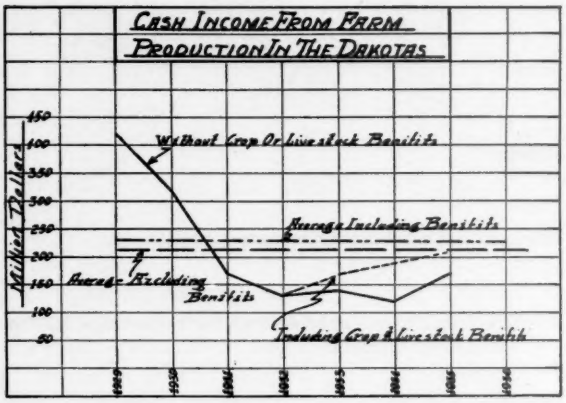

Cash Income From Farm Production In The Dakotas
Millions Dollars
Without Crop Or Livestock Benefits
Average Including Benefits
Average Excluding Benefits
Including Crop & Livestock Benefits

Chart IV

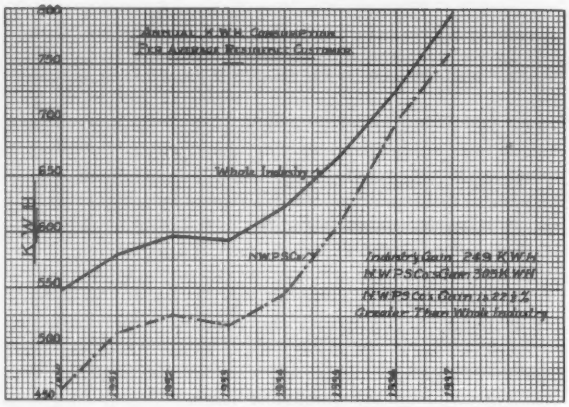


Chart V

was in excess of $400,000,000.00 and that it dropped sharply until in 1932, the cash income from farm production was only $130,000,000.00, a reduction of 67.5 per cent. The trend continued approximately on that basis until the year of 1935 when the trend is upward. Superimposed on this curve is the dotted line showing the crop and live stock benefits. With the cash income from our only industry (Agriculture) reduced in excess of 60 per cent, one can draw some conclusions as to the problems of operating a public utility in such an area.

In spite of the tremendous transmission system involved, and the drouth, I believe that our accomplishments in comparison with the trends of the industry over the past seven years are worthy of mention.

Please note that during the period from 1930 to 1937 sales of electrical energy to Residential customers for the industry reflect an increase of 249 kwhr per average residence customer, Chart V. Note that our gain for this same period was 305 kwhr, approximately 22.5 per cent greater than that of the industry.

Chart VI shows the trend of average rates for Residential service during this same period.

Note that during this same seven-year period the industry reduced its average residential rate $.0163 per kwhr while we reduced our Residential average rate $.024 per kwhr, a reduction exceeding that of the industry by 33 per cent.

Rates in the electric light and power business create much confusion in the minds of the public, in that the average person has little or no conception of the fundamental principles of rate making. Rates in the final analysis constitute merely a basis for spreading the costs against the total customers served. If a company served but one customer, then no rate would be necessary, as all of the costs would be charged to that customer. Because we serve thousands of customers coming under various classifications of service, we are obliged to adopt a schedule of rates which will equitably distribute the costs to the customers served. If it is the policy to distribute costs equitably, then rates by necessity, must follow a logical cost curve.

We know that the Inter-connected Transmission Line System brought reliable 24-hour per day electric service to many small communities and rural areas, which could never have enjoyed the service otherwise.

We have been confident that the economies have been equitably passed on to the public in the form of reduced rates. We are frequently asked whether the larger community is penalized by being a part of an inter-connected system in lieu of receiving its service from a local plant serving the one community.

To bring the electric light and power question back home so to speak, we have developed a hypothetical isolated plant serving a town of approximately 10,000 population, and in designing this plant, we have given consideration to the developments which have taken place in more economical generating equipment, and assumed the hypothetical plant as being privately owned, paying taxes and earning a fair return, Chart VII.

In chart VII you will note that the gross electric operating revenues are $250,000.00 which is approximately $25.00 per capita, and which we believe to be, the approximate revenues from a city of 10,000 people. The investment necessary to serve such a business with ample reserve power facilities is approximately one million dollars ($1,000,000.00) or a ratio of investment to gross of four to one. We believe that sound engineering will confirm these figures.

You will note that operating expenses, exclusive of taxes, are estimated at 48 per cent. We believe that this reflects economical operations. Taxes are cal-

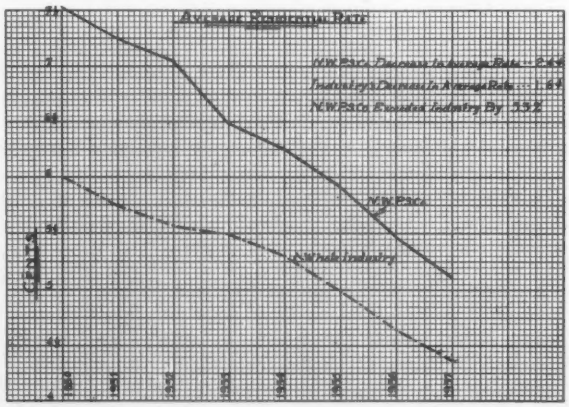


Chart VI

Chart VII—HYPOTHETICAL COMPANY

Isolated Plant—City of 10,000 Population

	Normal		5% Rate Reduction		10% Rate Reduction	
Investment	$1,000,000		$1,000,000		$1,000,000	
Operating Revenue	250,000		237,500		225,000	
Operating Expense	120,500		120,500		120,500	
Taxes	29,500		29,500		29,500	
Depreciation 4%	40,000		40,000		40,000	
Total Expenses	$190,000		$190,000		$190,000	
Balance for Interest	% 6	$60,000	% 4.75	$47,500	% 3.5	$35,000
Bonds $500,000	5	25,000	5	25,000	5	25,000
Preferred $250,000	6	15,000	6	15,000	4	10,000
Common $250,000	8	20,000	3	7,500	—	—

culated on the experience of our company, namely 11.3 per cent of the gross.

It has been our observation and experience that it requires 4 per cent for renewals, replacements and obsolescence to perpetuate a property. Thus, the total expenses, including taxes and depreciation, are $190,000.00, leaving a balance of $60,000.00 available for interest, which is 6 per cent on the investment.

It is considered sound practice in a business that requires a high ratio of invested capital to its annual gross, to finance approximately 50 per cent of the investment in the form of first mortgage bonds. For this priority right, both as to earnings and as to assets in liquidation, the bond-holders pay the premium for this priority protection by furnishing the money at the lowest rate of interest. In this instance, it is assumed that 5 per cent bonds would be approximately average for this type of investment.

The next Investor is the Preferred-Stockholder who is willing to speculate moderately, but who, likewise, wishes a preferred position. We have assumed that 25 per cent of the invested capital is furnished by this class of security, bearing interest at 6 per cent.

The equity money for this corporation, is what is termed as common stock and because the common stock earnings are entirely speculative and are only available after the payment of all other expenses, taxes and fixed charges, it requires a wider margin of profit to interest capital into this classification. We have therefore assumed in the hypothetical company that the common stockholder would be entitled to 8 per cent, under normal conditions.

Thus, you have the hypothetical company efficiently operated serving an isolated community with earnings sufficient to pay the interest on the outstanding securities.

One of the great American sports of the day is "Pressure for Rate Reductions Regardless Of The Economics Involved." In the second column, note the effect of a 5 per cent reduction in rates, which reduces the operating revenues $12,500.00 per year.

In that the same amount of electricity must be manufactured and delivered and in that all other factors remain the same, this $12,500.00 carries straight through to a loss in earnings available for interest, and automatically while the customers received only a 5 per cent reduction in rates, the earnings available for interest are reduced from 6 per cent to 4.75 per cent, a reduction of 20.8 per cent.

Because of the seniority rights of the various classes of investors, note that the bond-holder still receives his full interest. Note that the Preferred Stockholder receives his full interest, but note further that the reduction of $12,500.00 in gross revenues comes entirely out of the pocket of the common stockholder, reducing his interest to $7,500.00 (3 per cent) a reduction of 62.5 per cent.

Note in the third column the effect of a 10 per cent reduction in rates, and this reduction totaling $25,000.00 reduces the earnings available for interest to only $35,000.00, or a return of 3.5 per cent.

Note that there is still sufficient margin to cover the interest on bonds. Note further however, that not only is the common stockholders' earnings entirely wiped out, but the earnings available for Preferred Stock interest have been reduced from 6 to 4 per cent, a reduction of 33 1/3 per cent.

Few of our customers recognize that the electric light and power business requires from $4.00 to $5.00 of invested capital per dollar of annual gross business; (a ratio of approximately 20 to 1, compared to the investment of an ordinary mercantile business). Further, few of our customers appreciate that the major portion of expense is in fixed charges and in readiness to serve costs with the result that approximately only 15 to 20 per cent of the company's expenses are actually controllable.

There can only be two reasons for a change in rate schedules, viz.:

1st. A desire to increase or decrease the total earnings of the Company.

2nd. A desire to shift costs from one class of customers to another.

Chart VIII reflects a cost analysis for serving a residential customer from this hypothetical plant in a town of approximately 10,000 population.

In this Chart we have given effect to diversity between customers as well as diversity between classes of service based upon actual tests on our system, and the Generating and Power Plant Investment is allocated on that basis.

Note that the Chart shows monthly consumptions of 30-75-200 and 450 kwhr.

Note that the maximum demand superimposed on the system, after giving effect to diversities, is 165-255-855 and 855 watts. Because 250 kwhr of the total cover controlled water-heating service, the power facilities investment is not increased in the last bracket.

It is our observation and conclusion that generating facilities in an isolated plant should be adequate to supply the peak requirements, with the largest generating unit out of service and the aggregate of all other units operating at 75 per cent capacity. On this basis we find that the investment in generating facilities is approximately $235.00 per kilowatt of actual demand. Thus with this as a basis, we arrive at the generating facilities investment as $39.00-$60.00-$200.00 and $200.00 respectively.

Sound engineering dictates that the distribution investment including street-lighting and metering equipment will approximate the following: $60.00-

Chart VIII—ANALYSIS OF INVESTMENT COSTS
PER RESIDENCE CUSTOMER

Isolated Plant—City of 10,000 Pop.

Monthly Kwhr Consumption	30	75	200	450
Maximum Demand—Watts	165	255	855	855
Investment				
Generating Facilities @ $235 per K.W. of Demand	$39.00	$60.00	$200.00	$200.00
Distribution System	60.00	60.00	85.00	110.00
Miscellaneous Equipment	14.00	14.00	14.00	14.00
Total Investment	$113.00	$134.00	$299.00	$324.00
Fixed Charges, per Month				
Interest @ 6% per Annum	$ .56	$ .67	$1.49	$1.62
Depreciation @ 4% per Annum	.38	.45	1.00	1.08
Taxes	.23	.34	.66	.80
Total Fixed Expense per Month	$1.17	$1.46	$3.15	$3.50

$60.00-$85.00-$110.00. Miscellaneous equipment, including office equipment, transportation equipment, shop equipment, etc., averages approximately $14.00 per customer. Thus, the total investment in facilities is $113.00-$134.00-$299.00 and $324.00 respectively.

One of the largest problems confronting a public utility is the matter of fixed charges. I have previously defended 6 per cent for interest and 4 per cent for depreciation or a total over-all of 10 per cent as a fair wage for money. In addition, taxes reduced to a kilowatt hour basis, reflect a cost of 23c.-34c.-66c. and 80c. respectively. Thus, we have the total fixed costs chargeable to an average residential customer totaling $1.17-$1.46-$3.15 and $3.50 respectively. Note that these fixed charges cover only the readiness to serve and as yet, we have not started to produce or distribute the actual kilowatt hours.

In this analysis (Chart IX) we take the same monthly consumptions and reflect the unit operating costs. Note that the total operating expenses per customer are $1.72-$2.32-$3.99 and $7.26 respectively. These figures constitute the operating expenses, which we believe to be the average experience of the industry. Thus, we have total expenses including fixed charges of $2.89-$3.78-$7.14 and $10.76 respectively.

In the design of this chart we have given effect to the diversity between customers as well as between classes of service and the investment in generating facilities is allocated on that basis. Note on the bottom line that we have plotted in Northwestern Public Service Company's actual residential rates on its inter-connected transmission line system. Chart X shows this same information graphically.

You will note how close the actual rate follows the cost curve for all customers using in excess of 75 kilowatt hours per month and that all customers using less than 75 kilowatt hours per month are now enjoying a rate substantially below the actual costs necessary to serve. Does it not logically follow that when we reduce top rates below the cost of service, that this deficit must be absorbed either by other classes of service or in decreased earnings for the investor, or in decreased wages for the employees?

During the past few years there has been much public sentiment, in fact, *Government Pressure* for public utilities to reduce the top step of their rates. While I recognize the social problem involved, at the same time if costs are to be shifted to any other class of user, then, to protect ourselves, we should have a complete understanding on the part of those customers who are obliged to carry this additional cost A well designed rate is one which reasonably follows a cost curve and one which gradually reduces as the consumption of electrical energy and load factor increases.

You will note that under our rate structure a customer automatically earns the low average rate as consumption increases. In other words, the matter of reduced rates rests largely in the hands of the customer. In spite of an aggressive sales program carried on by our company as evidenced by the previous charts, we find that over 60 per cent of our

Chart IX—ANALYSIS OF OPERATING COSTS
PER RESIDENCE CUSTOMER

Isolated Plant—City of 10,000 Pop.

Monthly Kwhr Consumption	30	75	200	450
Operating Expenses per Month				
Distribution	$ .36	$ .36	$ .36	$ .36
Meter Reading, Billing, Collecting	.20	.20	.20	.20
Rent, Office Supplies, etc.	.29	.29	.29	.29
Admin. and Office Salaries	.23	.23	.23	.23
Insurance	.08	.08	.08	.08
Sales Promotion	.16	.16	.16	.16
Production Cost for Kwhrs Used	.40	1.00	2.67	5.94
Total Operating Expense	1.72	2.32	3.99	7.26
Total Fixed Expense	1.17	1.46	3.15	3.50
Total Expense per Month	$2.89	$3.78	$7.14	$10.76
Total Revenue Under N.W.P.S. Co. Rates	$2.23	$3.98	$6.93	$9.43

residence customers consume less than 50 kilowatt hours per month and therefore, under our present rates, do not pay their proportionate cost of the service. Thus, the lowering of the top step in our rate schedules would merely increase the loss on this class of customer, putting the electric rates on a political or social basis.

I have submitted this cost analysis on the hypothetical plant in a town of 10,000 people in comparison with our Class A rates (which is for a comparable size town on our system) in an effort to prove that in the design of our rates, we have recognized competitive costs.

In an Interconnected Transmission Line System, there are two noticeable differences as compared to the isloated plant, viz.:

1st. Because of the transmission line investment necessary to reach the communities, the average inter-connected transmission line system investment in power pool facilities (power plants, transmission lines and substations) is approximately $300.00 to $350.00 per Kilowatt of Demand, as compared to the approximate $235.00 in the isolated plant.

2nd. The cost of producing kilowatt hours in the inter-connected system from one large central plant is substantially below the production costs of the isolated plant and this saving in production costs on the average system offsets the increased fixed charges by reason of the larger power pool investment.

It was the purpose of this analysis to show that our larger communities, which in our system approximate 10,000 population, are not penalized by reason of being a part of our inter-connected transmission line system and that our rates are equitably designed. By continuing with this system, these larger communities, automatically make an inter-connected transmission line system possible, thereby making available to the smaller communities twenty-four hour per day electric light and power service, made possible, through the diversity, which an inter-connected system affords, and the benefit from large scale production in central plants.

I have submitted this analysis on the trend of fourteen years in the utility business From The Public's Viewpoint, to prove that our management has dealt equitably with the public. I have submitted this cost analysis to prove that our rates are equitably designed.

We have no quarrel with those communities which have chosen to operate their own electric utilities but we state, without fear of contradiction, that the people in those communities, have in no instance, received their utility service at a lower cost than comparable communities served by our company from our inter-connected transmission line system when analyzed from both the tax-payers' and the rate-payers' points of view, cumulatively from the inception of the plant.

All things being equal on rates and service, we believe that the larger communities should continue with the inter-connected transmission line system, for only by the continuation of such a system can the hundreds of small communities and farmers in their trade territory receive twenty-four hour per day electric light and power service.

While we are discussing the subject of electric rates and trends during the past fourteen years in an endeavor to measure our responsibilities in the various business cycles which we have experienced, I felt it would be of interest to note graphically the trend of our electric rates as compared to the trend of living costs and the trend of the costs of the Federal Government during this same period. Chart XI reflects these trends.

During the fourteen year period our average electric rates were reduced 49.2 per cent while the index of living costs was gradually reduced to approximately 23.4 per cent in 1932, and has reflected a gradual increase since that time, with the living costs in 1937 reflecting an increase of approximately 7.6 per cent over the 1932 base and the trend is still upwards.

Note the trend of the cost of Federal Government on a per family basis, which reflects an increase of slightly over 100 per cent since 1929. Please understand that I am not criticizing the trend of taxes, for so long as the American people expect the Government to carry on the various functions now participated in, we must expect the trend of Federal taxes to continue upwards. The Government in the final analysis, has no money except that which it collects from its tax-paying citizens.

I believe that an analysis of this chart will prove beyond any question of doubt that we, in the Electric Light and Power business, should not be subject to political persecution, when in the case of our company, our total tax bill, (which is a part of our cost of furnishing electric service) reflects an increase of over 100 per cent in the past seven years. Yet, in spite of these increased expenses, the trend of electric rates is still downward.

There is constant propaganda emanating from the Federal Government relative to the electric rates of private utilities. If you will again refer to Chart VIII you will note that interest and taxes represent approximately 35 per cent of the total costs of service. If a municipal tax-exempt utility, either through high taxes, high rates, or a com-

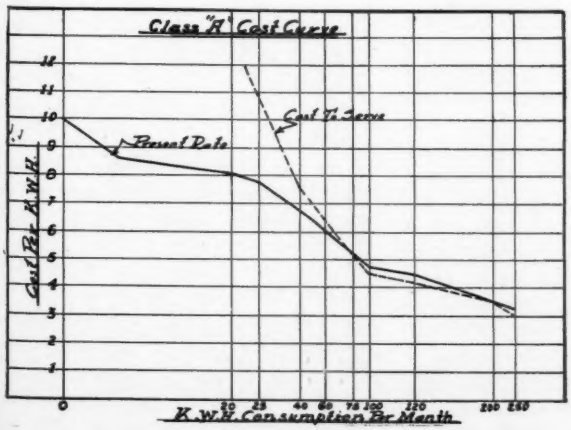


Chart X

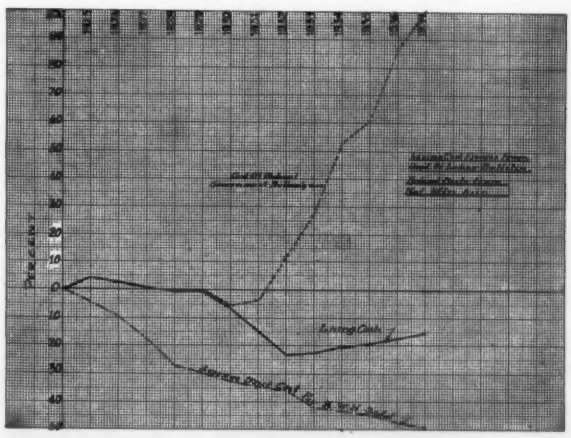


Chart XI

bination of the two, sees fit to amortize and pay off its investment in an electric utility, then that community automatically avails itself of low electric rates after getting rid of its investment charges. Such a policy involves the charging of one generation with costs which logically belong to subsequent generations.

We have carefully analyzed each municipal plant operating adjacent to our inter-connected system and where low rates exist, we have found without exception, that in earlier years, the people of that community, either through high rates, high taxes, or a combination of the two, paid the premium which make the low rates possible today. Thus, you have the story of our accomplishment from the public's viewpoint.

FROM THE EMPLOYEES VIEWPOINT

The personnel element is, without question, the most important factor in any business. While physical properties are necessary in the conduct of a business, yet this investment becomes profitable only when coordinated with the personnel element privileged to carry on the business. Our payroll records in the earlier years of the Company were not kept in sufficient detail to enable the segregation of operating payrolls from construction payrolls, and the record of operating payrolls is available only since 1928. During the 10-year period from 1928 to 1937 (both inclusive) Northwestern Public Service Company paid out in wages the sum of $5,100,513.00. The gross operating revenues, the total operating payrolls, and the payrolls in percentage of gross operating revenues are reflected in Chart XII.

Note that in 1928 the total operating payroll equaled 21.7 per cent of the gross operating revenues of the Company. Note further, that both the gross operating revenues and the operating payroll increased substantially during the first three years, or through 1930, the peak payroll for that period coming in 1930 and the peak gross operating revenues coming in 1931. Up to and including the year of 1930, wages were gradually, but consistently increased, and the standard was 10 hours per day and six days per week. During the drouth and general business depression, our business, like all other business, receded sharply between the years of 1931 and 1933 and to meet this loss of revenues, and to perpetuate the solvency of the Company, common stock dividends were abandoned entirely. In 1932 the trend of earnings was still downward and a general payroll reduction was made in October applying to all employees receiving more than $100.00 per month and effecting a reduction in their salaries of approximately 6 per cent.

The drouth and depression continued and in April of 1933 with common stock still on a "No Dividend" basis, we were obliged to effect a second reduction in wages, affecting all employees, and amounting to approximately 8 per cent.

In September of 1933, we came under the provisions of the National Recovery Act with its program of reducing the hours of employment, but maintaining the present wages for the present employees, in an effort to stimulate business recovery. In most retail and commercial establishments the hours of business were reduced accordingly and only a small percentage of employees were actually added. In our case, being obliged to serve the public 24 hours per day, we were required to increase the number of employees by 15 per cent.

Since that period we have gradually restored wages to all employees and increased the pay to the new employees added under the National Recovery Act, the record reflecting the following:

(A). In the aggregate, employees on the payroll in 1931 have had their wages entirely restored in 1937. The aggregate of those employees' wages in 1937 being 67/100ths of 1 per cent more than in 1931. In addition, the hours of employment of those employees have been reduced from ten to eight hours per day, a reduction of 20 per cent.

(B). The employees added under the National Recovery Act were hired as new employees at the prevailing wages set by the National Recovery Act. As these men and women were trained and were able to handle their respective jobs, their pay was substantially increased until in the aggregate, their average salary in 1937 was 31.04 per cent higher than when they were employed in 1933.

The above figures are the trends of our own company and reflect the policy of the Management towards its employees. With the average operating payroll for the ten-year period being 20 per cent of the gross operating revenues, and the actual payroll for the year of 1937 being 20.8 per cent, the highest payroll in dollars in the history of the Company, we fail to see where we have contributed to an unbalanced business condition.

During this entire period we have maintained employees' insurance protection in the total amount of $463,000.00, the entire premium on which is paid by the Company. In addition to this gift insurance, employees are privileged to purchase additional amounts at very low rates under the Company's group insurance policy.

Prior to 1936 we had in effect a plan providing for the pension of all employees at the age of sixty-five years, the basis of such pension being 2 per cent of the average annual salary times the years of service, with the further provision that the pension salary, in no instance, could be more than 50 per cent of the last full year's salary. A number of employees are enjoying pensions under this policy. When the compulsory Social Security and Old Age Pension Plan was adopted by Congress in 1936, we were obliged to abandon our pension

Chart XII—NORTHWESTERN PUBLIC SERVICE CO.

Year	Gross Operating Revenue	Total Operating Pay Roll	Pay Roll Percent of Gross Revenue
1928	$ 2,265,065	$ 491,769	21.7%
1929	2,501,775	520,400	20.8%
1930	2,701,819	578,220	21.4%
1931	2,751,896	556,112	20.2%
1932	2,492,945	463,906	18.6%
1933	2,267,167	419,740	18.5%
1934	2,341,380	445,360	19.0%
1935	2,541,830	487,706	19.2%
1936	2,781,737	547,186	19.7%
1937	2,836,238	590,114	20.8%
Total	$25,481,852	$5,100,513	20.0%

plan and now both the Company and the employees contribute to the General National Jackpot, looking to the Government for our old-age security. Whether this plan will work out more advantageously to each of us, time alone will tell. We do have before us the experiences of many foreign countries who have ventured in this same field of Social Security.

Incidentally, it may be of interest to note the trend of taxes paid by the Company during this period as evidenced by Chart XIII showing graphically total taxes in percentage of the total gross operating revenues.

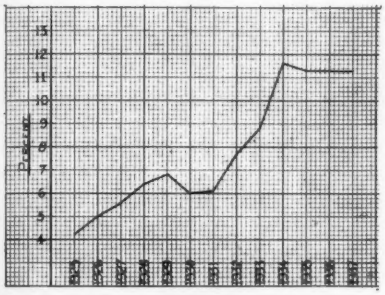


Chart XIII

Note that in 1925 total taxes required only 4.2 per cent of each dollar of gross operating revenue while in 1937, total taxes required 11.3 per cent. You will recall that the total operating payroll in 1937 was 20.8 per cent of the gross operating revenues. If taxes in 1937 had required only the same percentage of the dollar of gross income as in 1925 (4.2 per cent) and the balance was available to the employees, wages could be increased 34 per cent.

Please understand that I am not particularly criticizing the trend of taxes, except to point out that as more of the company's income is required for taxes such amounts are not available for reduced rates to the public, increased wages to the employees or increased return to the investor. The trend of the Company's tax bill is still upward with no end in sight.

FROM THE INVESTOR'S STANDPOINT

The average investment in the facilities used and useful in our business during the fourteen-year period is reflected in Chart XIV.

Note that the average investment was $14,099,554.00 and that during this period we employed an average of four hundred and four employees. Thus the investors provided $34,900.00 to make a job possible for each employee. I am sure that all fair-minded people agree that those who invest their money in a business are entitled to reasonable wages on this money, the same as the employees are entitled to reasonable wages for their services.

CHART XIV—NORTHWESTERN PUBLIC SERVICE COMPANY
1928-1937 INC.

Average Fixed Capital	**$14,099,554.00**
Average Number of Employees	**404**
Average Investment per Employee	**34,900.00**

Unfortunately, however, the investor gets his wage after the payment of all operating expenses which includes employees' wages and taxes. What has been the experience of the investors in our company during this period? Chart

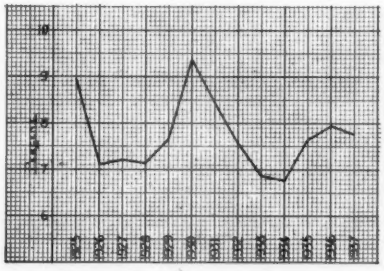


Chart XV

XV reflects the earnings available for interest and depreciation by years.

We previously agreed that 4 per cent (or an average life of 25 years) is a reasonable provision for depreciation, replacement and obsolescence in our business. A study of individual companies indicates that in the past twenty-five years it has required this amount to cover the actual depreciation and obsolescence as it was experienced. Further, we have gone on the assumption that 6 per cent was a fair wage for money in a hazardous business where the investor is not guaranteed an income, but is obliged to take what is available if, and when, earned.

In other words, 10 per cent in total fixed charges should be the fair wage of the investor to cover the interest on the investment and to provide the necessary reserves for ultimate renewal and replacement of the property, as it is worn out or becomes obsolete in the conduct of the business.

Note that during the fourteen-year period the investors in our company have averaged a return of only 7.77 per cent for interest and depreciation which is 22.3 per cent below the fair return basis. At no time during the fourteen-year period did the investor earn the full return of 10 per cent for interest and depreciation, and at the end of the fourteen-year period, we find earnings of only 7.78 per cent.

Thus, you have the record indicating the treatment afforded the investor, during the fourteen-year period, which completes the analysis from the viewpoint of the three principals involved, i.e.—the Public, the Employees and the Investors.

Probably the most discussed question of the day is that of Holding Companies and their relationship to the electric light and power business. Here again, in my opinion, we have allowed a system to be established without making sure that the public understood the necessity.

As pointed out in Chart VII (A Hypothetical Company), a sound financial structure consists of approximately 50 per cent first mortgage bonds—25 per cent Preferred Stock Equity and 25 per cent Common Stock equity. There has always been a ready market for sound first-mortgage bonds so long as the bonded indebtedness did not exceed approximately 50 per cent of the Property Account and for this protection, investors were willing to loan money at a low rate of interest.

Second, there were those people in the territory and the investing public who were willing to speculate partially in the purchase of Preferred Stocks, so long as they were protected by priority rights both as to earnings and as to

assets in liquidation, which class of investor has furnished approximately 25 per cent of the Invested Capital. Thus, we have 75 per cent of the financial structure provided, leaving what we choose to call the "Equity Money" or "Common Stock Interest" to be financed.

A review of the period, and my personal experiences, reveals that the investing public could not be interested in the purchase of common stocks in remote areas except as two requisites were complied with, viz.:

1st. Management must be centralized within the reach of the financial people.

2nd. Investments must be so diversified that the adversities of one locality would not completely wipe out this equity investment.

Thus, the Parent Company, or more often referred to as the "Holding Company," came into existence, to furnish this "equity money" and "group control," both of which were necessary requisites on the part of the investor furnishing the equity capital.

Without question, there were questionable economics surrounding the organization and operation of some of the Parent Companies and the history of those companies' securities reflects the losses which followed. Such has been the experience of some investors in every industry and it is the investor in those securities who has the right to complain.

From the consumer's standpoint the equity money was furnished and invested in facilities to render electric service. I fail to see where the consumers of electric service have any logical right to complain. Why should the Federal Government become so frantically concerned over the people who invested in equity securities. Are they seriously concerned over the welfare of investors, or is it a political vehicle?

Another function of the parent company is the rendering of supervisory or technical service to the operating companies, such as engineering, financing, accounting, sales promotion, general management, etc. These services in the case of our company, cost us approximately 46/100ths of 1 per cent of our gross operating revenue, and we are firmly of the opinion that the same services could not be secured on the open market for a like amount. We further state that these technical services are necessary in the successful conduct of the business and we are unable to find where our customers are in any way penalized by reason of securing of these services from the Parent Company.

The Electric Light and Power Industry requires constantly increasing capital investment to take care of the business which is being steadily added to the lines and thus, one of the major problems confronting the industry is the furnishing of this so-called "equity money" necessary for a balanced financial structure.

I believe that future investors furnishing equity money, will insist upon these same principles which made the parent company necessary twenty years ago, i.e. —"Group Control and Diversity of Investment."

Thus, the law which limits subsidiary holdings to two contiguous systems largely destroys the benefits of diversity, thereby making the investment less attractive to the investors.

Had we as operating executives, convinced our public of these economic factors, then such vicious legislation could have been avoided.

As a confirmation of these principles of finance, I submit in Chart XVI "Group Control" by the Federal Government established in 1933.

The Federal Government found it necessary in the stabilizing of Agriculture to furnish "Equity Money" to the various branches of that industry and has set up the following units:

Federal Land Bank
Production Credit Corporation
Federal Intermediate Bank
Bank for Cooperatives
Federal Feed and Seed Loan.

These units, with branches throughout the entire United States, received their equity money from the Federal Treasury. Did the Federal Government put in the equity money leaving the management of each branch a matter of local concern? No, they did exactly as the Electric Light and Power Industry did 20 years before, i.e.—established a Holding Company Structure or Group Control known as the Farm Credit Administration, giving this unit control of all of the agencies.

We believe that the establishment of this structure on the part of the Federal Government is a complete vindication of the Public Utility Group Control, so often referred to as "Power Trust"—"Holding Company," etc.

We can not be particularly critical of the public when they question our integrity and sincerity, when we see the propaganda emanating out of political centers. We are not particularly entitled to sympathy when we analyze the weakness of utility management in keeping the public informed as to the various policies and plans it incurs in the conduct of its business.

In the final analysis, the rendering of electric light and power service is nothing more or less than the manufacture and distribution of a commodity or service, and there is no reason why we should not regain and maintain a sympathetic understanding on the part of the public we are privileged to serve. Our first responsibility is that of furnishing adequate and reliable service at the lowest possible cost consistent therewith. Next, we are obliged to prove that our Investments are sound, and that our business is economically operated.

When these have been successfully accomplished, then we should prove that our rates cover only the actual cost of service and that our business is efficiently conducted.

When all of these things have been accomplished, *then and not until then,* will we take the Electric Light and Power Business out of the political arena.

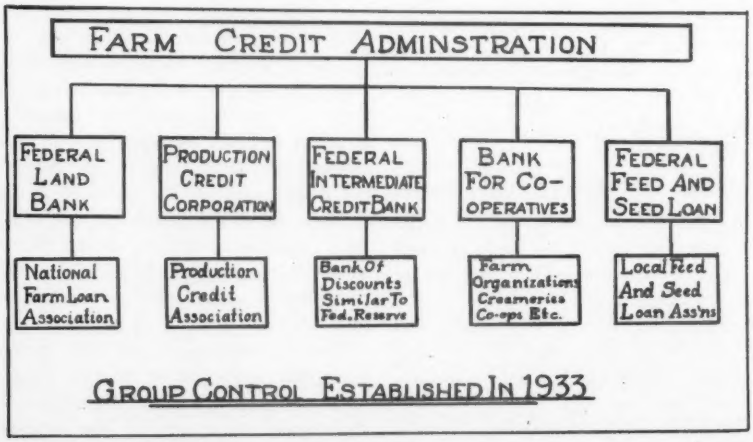

FARM CREDIT ADMINSTRATION
FEDERAL LAND BANK
PRODUCTION CREDIT CORPORATION
FEDERAL INTERMEDIATE CREDIT BANK
BANK FOR CO-OPERATIVES
FEDERAL FEED AND SEED LOAN
National Farm Loan Association
Production Credit Association
Bank Of Discounts Similar To Fed. Reserve
Farm Organizations Creameries Co-ops Etc.
Local Feed And Seed Loan Ass'ns
GROUP CONTROL ESTABLISHED IN 1933

Chart XVI

No Industry Is Completely Electrified

By A. D. McLay
The Detroit Edison Company

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

AS LONG as new ideas continue to arise in the world, it is safe to say that no industry is completely electrified.

Today twice as many patents are being granted as in the decades which gave us the birth and expansion of the telephone, the automobile, the motion picture, the airplane, rayon, and the radio. And who shall say that in the million and one-half patents granted since 1900 there are not another half-dozen like these which will have an equal or greater impact on tomorrow?

So tomorrow we will have other new things using electricity in industry. Today among the new things are air conditioning, better lighting, and the application of electricity to industrial heating and chemical processes.

Air Conditioning

Within the last three years 35 industrial air conditioning installations were made in Detroit factories. The Ford Motor Company has over 3000 tons of cooling capacity for comfort conditioning in foundries, and other portions of the plant. Bower Roller Bearing Company has 50 tons of air conditioning serving its assembly and final inspection department, resulting in a better product as well as better working conditions for the 350 employees in this important division. If Detroit's latitude warrants such installations, there must be in the United States as a whole many industrial air conditioning plants now in operation and a large future market for industrial applications.

A questionnaire recently sent to all air conditioning users in Detroit, industrial and commercial, asked, "To what extent has it increased your summer business?"

4%	said it had increased business	...100%
6½%	said it had increased business	... 50%
3%	said it had increased business	... 35%
42%	said it had increased business	... 25%
9½%	said it had increased business	... 20%
3%	said it had increased business	... 15%
22½%	said it had increased business	... 10%

In commenting on further advantages, 97 per cent said that customers had mentioned the pleasing relief from street discomfort; 49 per cent mentioned elimination of dust and dirt as the chief asset; 12 per cent mentioned decreased spoilage and less rejects; and 38 per cent mentioned the elimination of noise.

Incidentally, the latter advantage is one which alone is often worth the cost of an air conditioning installation and suggests further effort at dust and noise elimination by forced ventilation in places where complete air conditioning equipment is not warranted or cannot be financed. The noise and dust of city streets can be shut out of homes and commercial places where value has depreciated because of widened highways, new car lines, or other noise or dust annoyances. The possibilities for ventilation load have hardly been touched. This phase was summed up by the report of National Resources Committee (June, 1937) on "Technological Trends and National Policy":

"Air conditioning, which was first applied in factories for the benefit of the goods, is likely to be extended gradually as it becomes cheaper and as more thought is given to the efficiency and comfort of the worker. With air conditioning also will come better insulation against noise."

Today, except in plants which are growing or are in need of modernization, the sales engineer might look with a microscope and find but few material-handling and power-drive installations to electrify. But these newer uses, ventilation for noise and dust elimination and complete air conditioning, are fertile fields.

Lighting

A few months ago General Motors Corporation installed a 50,000-watt lamp to give the desired lighting for a particular final inspection job. The idea was to bring the sun indoors. It gives 750 foot candles on the object, or body, or model being studied. Other installations in automobile plants have 170 foot candles for other less important types of inspection.

That better lighting is en route is illustrated by the following figures for connected lighting loads in automobile plants in 1929 compared with 1937:

	Kw–1929	*Kw–1937*
Plant A	7417	9000
Plant B	2318	3550
Plant C	3800	4975
Plant D	1336	2992
Plant E	1035	1575
Small plant	20	42

Average Increase—38%

It is probably safe to say that no plant is completely lighted in accordance with the modern conception of light for seeing, for proper safety, increased production, fewer rejects, less spoilage, and improved morale. The following from "The Science of Seeing" by Luckiesh and Moss tells that story:

"Measurements applied to various visual tasks in homes, schools, offices and factories indicate that hundreds and even thousands of footcandles are necessary. . . Engraving and sewing required 500 to 3000 footcandles. Inspection operations in a plastics plant required 100, 200, 400 and 1150 footcandles, respectively. Inspection operations in a rubber plant required from 200 to 800 footcandles. A delicate job on a filing machine used to finish tools and dies required 3000 footcandles. . ."

Based, therefore, on considerations of proper and profitable lighting alone, it is safe to say that no industry is completely electrified. Industrial lighting's social value plus its load, load factor, and revenue-producing possibilities warrant more support and more effort by utilities.

Melting and Heating

One of the large automobile plants used about one hundred million kilowatthours for electric heating and melting in 1937. Electric melting is a rapidly growing load in the metal-producing and metal-using industries because of better control of analysis and lower loss of expensive alloying elements. The use of electrically melted steels has advanced rapidly in the automobile industry and in machine parts which are to be highly stressed. Almost all of the so-called stainless steels are melted electrically.

A large part of the alloy machinery-steel tonnage is duplexed. That is, it receives its initial melting in a converter or open hearth, and is then poured into the electric furnace for superheating, alloying, and refining. Cast iron melting is also a growing load. This, too, is often a duplexing operation.

The melting of the so-called white metals, aluminum alloys, zinc, tin—metals having a melting temperature below 1100° to 1200°F—is also a rapidly growing application, chiefly in 60-cycle induction furnaces or pots. The pot is itself heated by induction and the metal within the pot is heated by contact and conduction.

Type metals in all newspaper and printing establishments can be melted electrically and the advantages of electric melting in this field are numerous. Here is a good opportunity for load building.

All the high temperature heat-treating operations, and all those requiring close temperature control, were and remain an electrical application. Much, however, of the lower temperature heat-treating applications and those needing less accurate temperature control were lost to fuel with the advent of the improved fuel furnaces. Now, the newer electric heat-treating methods tend to win that load back to electricity.

Induction heat is being applied in new ways to do old things more efficiently and to do other things which are entirely new. Some of these induction heating processes use ordinary frequency. Others use a frequency just below a thousand, and still others are using frequencies of several thousand cycles. All of these, of course, induce the heat within the metal to be treated by eddy currents and hysteresis. Obviously, this method of heating is highly efficient because the metal is made to heat itself from within. The part being heated is therefore at a much lower temperature than its surroundings, which is just the reverse of most other heating methods. This makes for heating costs which in many instances are much lower by electricity than by any other means. But, also, improved products result.

Consider, for example, the drying of paints, enamels, and other finishes: A metal piece is dipped in enamel. It must then be dried. It is conveyed into an oven where the metal passes into an electric field. The metal gets warm and what happens? The paint closest to the metal tends to dry first. It dries from the inside toward the surface. In other heating processes it dries on the surface first and the surface film is broken with craters by the escaping volatiles from within. The "inside-out" heating method produces a better looking and better lasting finish.

For several years Chrysler has been using this method for various drying processes. Plymouth passes 10,000 wheels in 16 hours through a 360-cycle induction oven for drying paint at about 270°. Another Chrysler application flash-dries 60 bodies an hour. After a washing operation the bodies are passed through the oven for quick drying, and water or washing solutions are quickly dried out of all crevices. Several other low temperature induction drying operations are in use.

Induction heating for low temperature is being put to all kinds of uses and there are many applications in the metal-using as well as the metal-producing industries.

High frequency, high temperature, induction applications are also increasing rapidly for all types of heat treating and are bringing back to electricity many of those heat-treating and drying applications which had for a time been lured away by the improved fuel furnaces, or had always been done by steam or other low temperature heat.

Another fairly new method of heat-treating is the "salt bath furnace," merely a container holding a molten salt heated by electrodes within the bath. The work to be heated is immersed in the bath. It is used for heat-treating, case-hardening, carburizing, reheating, tempering and annealing. It is reported that this principle has recently been adapted to the construction of furnaces for operation up to 2400° F. This type of furnace has many applications, probably including heating for forging, which can build load in many of the metal-using industries. "Controlled atmosphere" is obtained by the simple process of eliminating all atmosphere around the work by immersion in the salt solution.

Copper brazing, tool hardening and all the high-temperature and precision-controlled applications properly belong to electricity, and no industry is completely electrified if induction heating, salt bath heating, or ordinary electric heating methods are not applied to reduce cost and improve product.

The Ford Company is advertising "Something New Under the Sun—and the Rain," i.e., the drying of synthetic resin enamel by infra-red light. The sprayed bodies are subjected to the heat of a battery of 240-watt infra-red lamps in gold-plated reflectors. These drying ovens are several hundred kilowatts each. Smaller applications of 50 to 100 kilowatts are used for other smaller drying operations. J. L. McCloud, in the March issue of *S.A.E. Journal,* says, "This method of baking finishes is in fact very economical, and in our Rouge Plant, is way under the cost of steam ovens."

In addition, of course, in the heating field are those thousands of applications for midget heaters.

Electricity in Agriculture

Today 20 people out of every 100 gainfully employed in the United States are in agriculture. One hundred years ago 77 out of 100 were farm workers. This decrease is chiefly due to the employment of machinery. Six per cent of all the mechanical prime movers in the country are on farms. Only 3½ per cent are in central stations. The electrification of agriculture is just beginning.

The National Resources Committee on Technological Trends and National Policy says:

"On certain types of farms, electricity can be used in many ways to lower the cost of production or improve the quality of products. On dairy farms it can be used for milking, separating, cooling, pasteurizing, sterilization of utensils and refrigeration of products. On poultry farms it is used for heating incubators and brooders, for illuminating laying houses to increase egg production, and for mixing feed. In market gardening this power is used in pumping water for irrigation and for washing vegetables, in heating hotbeds, and refrigeration for temporary storage of perishables. On grain and livestock farms fewer jobs have been found for electric power, but it can be used for pumping water and for storing grain and hay. Where water is pumped from wells for irrigation of field crops, electric power is used extensively. More than 200 different uses of electricity on farms have been noted. Rural electrification has its most immediate effect on the home."

An interesting application on many large farms is the installation of equipment for quick freezing and holding of perishables. Poultry and meats are frozen at −10° F and held at −15° F and then held for a good market. Apples and fruits are also held in this way. One large cooperative farm in Western Michigan is building a refrigerator 180 feet by 180 feet and three stories high. "Meat lockers" are being rented by many cold storage companies where

farmers or anyone can quick-freeze and store meats until wanted.

Transportation

If a good, efficient, compact, light storage battery had been available in 1900, central stations might today have been operating much of the nation's transportation. As it is, prime movers in central stations are only 3½ per cent of the nation's total mechanical horsepower, whereas the prime movers for transportation account for 87 per cent of this total. Nearly 79 per cent of all our prime mover capacity is in automobiles, busses, trucks, and motorcycles. About 8 per cent is in locomotives and street railway plants. The transportation industry will not be electrified until most moving vehicles are driven electrically, either by improved storage batteries or some other method not known to us at present.

Communication and Control

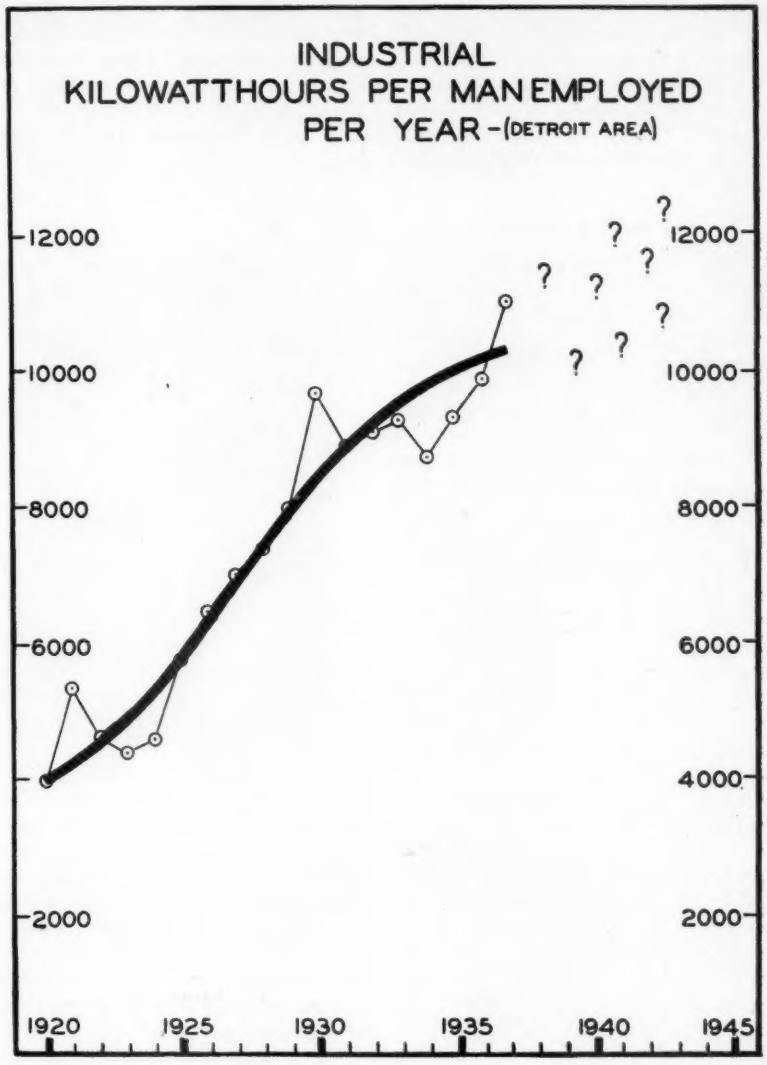
Television will be with us soon. What effect it will have on the electric central stations is difficult to determine at this early day. Automatic control of industrial processes, however, is having a profound effect. C. C. Furnas in his book, "The Next Hundred Years," says, "At first guess I would say that there are at least a million workers in this country doing routine tasks of sorting, inspecting, or controlling, who could be cheaply and successfully replaced by devices actuated by photocells."

Chemical Industries

The chemical industries are fairly well electrified, but growth and change is so rapid that a plant completely electrified today needs something new tomorrow. Moulded materials and plastics are among our most rapidly growing industries.

Farmless farming, no doubt, should be classified as a chemical industry because no soil and no farm are needed—merely water, electricity, chemicals, and light. To what extent this process and the production of the necessary chemicals will use electricity remains to be seen. The following is from *Science Digest,* January, 1937:

"Tomato plants so large that the fruit must be picked from a stepladder are yielding at the rate of 217 tons per acre of tank surface per year. This compares with a normal yield of about five tons per acre. Potatoes have been produced at the rate of 2,465 bushels per acre of tank surface without bringing into play the maximum of growth stimulating conditions. The average potato yield in the United States in 1934 was 116 bushels per acre."



Metallurgy

One of the metallurgical mysteries of the world was how the Central Powers continued to possess a good supply of aluminum although their bauxite was shut off.

Aluminum is the most abundant metal in the earth's surface. It is estimated that over 8 per cent of the outer crust of the earth is aluminum and only about 5 per cent iron. Aluminum, however, is still somewhat expensive, chiefly because its production requires 10 to 12 kwhr per pound of metal. It is made chiefly from bauxite, which has a a large percentage of alumina. It can, however, be made from clay, and the Central Powers used that material. It was expensive but it worked. The process was developed years ago by an American, Dr. Cowles, and is known as the Cowles process. Much study has been given to the production of aluminum and other light metals, including magnesium, and larger electrical loads are coming from that source.

Electric welding, though not a highly desirable electrical load, is growing rapidly. One utility estimates its connected welding load to be in excess of 600,000 kva.

The various makes of the average price automobiles of 1935, according to the National Resources Committee, contained 83 different alloy steels. Potentially, stainless steels and other high alloys promise a large and growing use for electricity.

"Technological Trends and National

Policy" states, "There is not a single plant in the world engaged in the fabrication of articles of copper, brass, lead, zinc, etc., which is completely up to date in the utilization of labor saving devices." That is the same as saying that the industry is not completely electrified.

Power Per Worker

Power consumption figures in the Detroit area indicate that today each worker has 73 "electrical men" at his command constantly during his every working hour. In 1920 he had 26 such "electrical men." The robots are paid $1.50 a year. The men earn a thousand times as much.

In 1920 each Detroit worker used about 4000 kilowatthours. In 1937 he used 11,000 kilowatthours. (See following table.) And the increased power in his hands has made jobs for 78,000 more men in 1937 than in 1920 in the Detroit territory, not to mention other jobs for other thousands in all of the dozens of industries outside of the territory, furnishing materials to make the automobiles and other products within the territory. Thus power in the long run makes jobs.

Can we project this 1920-1937 trend straight into the future? Or will it turn up—or down? "Technological Trends and National Policy" states, "Important increases in power use may be expected in fields in which power or heat costs are a main factor. Such are electro-chemistry, aluminum and magnesium production, air reduction, air conditioning, large-scale lighting and ultraviolet radiation, fast navigation, and aviation. Further increased use of cheapened electricity may likewise be expected in lines in which electricity has ready rivals, especially for heating industrial and other equipment and occasional room warming. With all increased uses of electricity will come more inventions on the ways to use it. Particularly notable may be the fostering of air conditioning, steep-flight aircraft, ferrous, aluminum, and magnesium alloys, nitrogenous fertilizers, copper, and the whole strong-current electric industry."

INDUSTRIAL POWER—KWHR PER MAN EMPLOYED—DETROIT AREA
1920 TO 1937

	(1) Industrial Power (Kwhr)	Number of Factory Employes (Average)	Kwhr per Man Employed
1920	697,691,000	172,000	4,000
1921	522,056,000	96,750	5,400
1922	715,887,000	156,500	4,600
1923	955,867,000	216,000	4,400
1924	973,470,000	211,000	4,600
1925	1,370,663,000	236,000	5,800
1926	1,520,404,000	235,000	6,500
1927	1,449,069,000	207,000	7,000
1928	1,932,790,000	261,000	7,400
1929	2,276,679,000	285,000	8,000
1930	1,865,568,000	192,200	9,700
1931	1,388,132,000	155,400	8,900
1932	1,199,829,000	131,900	9,100
1933	1,128,473,000	120,700	9,300
1934	1,695,446,000	194,000	8,700
1935	2,079,696,000	224,300	9,300
1936	2,338,193,000	235,100	9,900
1937	2,779,449,000	252,000	11,000

(1) Kwhr supplied by The Detroit Edison Company plus generation in isolated plants of more than 100 Kw capacity.

Is Industry Completely Electrified?

Shortly before his death, Mr. Edison wrote:

"I am an old man now. I have lived to see the street car, the elevator, the electrified railroad, the automobile, the phonograph, the motion picture, the radio, the airplane, and the beginning of television. It seems today to many, as it seemed to most men and women in 1882, that no great forward steps remain to be taken.

"It may be that the next 40 years will not produce inventions of such revolutionary character. Progress has been so rapid that we may require a breathing spell in which to consolidate our gains, and develop present inventions to their full capacity. But of one thing I am more positive than I was even 40 years ago—the electrical development of America has only well begun."

No industry is completely electrified.

Value and Characteristics of Electric Cooking

(*Continued from page* 136)

Power Company provides for a separate meter so there is no argument as to how much the customer pays for this service.

Little or nothing has been said previously concerning the refrigerator for the simple reason that because of its good load factor and small connected load it is almost obvious that this business is profitable on existing residential rate schedules. It may be said that the electric refrigerator has reached the point of universal acceptance by the public so that the revenue to be obtained from this class of business in the future should be constantly increasing.

Just how much money should be spent in promotional effort to secure range and water heating business is a question which must be decided by the individual companies. In considering the problem one must not overlook the fact that the installation of a range requires larger service wires and thus eliminates the "bottle-neck" existing in a great many cases today, thus opening the way for greater use of electricity by other appliances now on the market and some perhaps which have not yet been developed. The satisfaction in the use of appliances depends largely upon maintenance of adequate voltage so that enlargement of service wires, entrance cabinets, etc., necessitated by ranges at the same time provides better voltage for operation of other appliances and thus contributes toward their satisfactory operation.

In the words of the economists, the amount to pay for business is equal to the present worth of expected future earnings over an extended period. If the utility assumes that a piece of business put on its lines today will be used for the next ten years it is a simple matter to determine the present worth of this business if the net return or profit is ascertainable. In order to come out ahead the amount spent in promoting the sale of such equipment should be something less than the net worth on this ten year basis and to play safe the amount spent should be considerably less than the present net worth. By doing this the customers as a whole should benefit as time goes on because it will be possible for the utility to lower its rates in the future. Another way of looking at this problem is that if the net earnings obtained from an additional appliance after two or three years offsets the expense of getting it, the revenue obtained after this period of three years is over will increase the net return of the utility by just this amount.

In determining the amount to spend and what action should be taken to secure this business, executives must not be bound by past practices such as ownership of the company's equipment being limited to the metering equipment and service wires extending from the alley to the building. Because some insist that ownership of all equipment inside buildings except meter should be vested in the customer is no reason for accepting this as the truth. Because some cost analysts insist upon spreading overhead expenses in certain ways between the various

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Electric Cooking Goes To Town

By Harry Restofski

West Penn Power Company, Pittsburgh, Pa.

An address before the Fifth Annual Sales Conference, Edison Electric Institute, Chicago, March 29-April 1

WITHOUT any fanfare of trumpets the commercial electric cooking market has been growing steadily until now it is on the verge of becoming "big business." Electric cooking, with its very real points of superiority over all other methods, with constant improvement in equipment and substantial reductions in equipment cost, with low rates quite generally available, and with a record of satisfactory performance, needs only increased sales effort for very rapid development. And increased sales effort is justified because this load, with its high load factor and good diversity, is desirable load.

The Commercial Electric Cooking Council's Survey for 1937 includes figures from 104 operating companies that serve 1,785,000 commercial customers. Last year these companies sold 63,500 kilowatts of commercial electric cooking equipment, using over 72,000,000 kwhr annually and producing an estimated annual revenue of $1,600,000 per year. It is estimated that each kilowatt connected uses about 1200 kwhr and produces a revenue of about $25.00 per year.

The current issue of *Electrical World* carries an article by Mr. S. L. Apperly of Southern California Edison Company entitled "Commercial Cooking Loads Found Highly Satisfactory." It is the story of a very successful operation being dished up to us hot off the griddle! Mr. Apperly says that several years ago they decided the commercial cooking field was a good one to develop, with advantages of high load factor, good diversity, low investment to serve and unity power factor. They went after the business with a program of salesman training, a wiring allowance, traveling demonstrations, intensive direct mail coverage and free trial of equipment. In 1937 they secured $127,000 of new annual revenue, this averaging $15,875 per salesman, and at a promotional expense of 33 cents per dollar. Kilowatts connected were 3,850, which produced an average annual revenue of $33.00 per kilowatt at an average rate of 2 cents.

Before going on to a consideration of the all-electric kitchen, with which these remarks are principally concerned, let us pause for a glance at the market for counter cooking load.

MR. RESTOFSKI

The Commercial Electric Cooking Council tells us there is a potential business of approximately 1 kw of counter load for every family in every urban community. They find further that each kw of electric cooking equipment uses approximately 1,500 kwhr annually. Counter appliances average $30.00 annual revenue per kw installed, with substantially higher figures in some sections. The fact that equipment of this kind can be purchased a piece at a time, as the customer is able to buy, and without a major expenditure at any one time is, of course a distinct advantage.

For several years sales of counter cooking equipment have been increasing rapidly. Regardless of what local rate levels are, this type of equipment has so many sales advantages that it seems safe to say that there are no serious obstacles preventing any utility from getting this very desirable load if it really goes after it.

The Annual Survey of Electric Commercial Cooking Sales for 1936 called attention to a distinct trend toward more extensive sales of heavy-duty cooking equipment such as ranges, multi-deck bake ovens and broilers. Electric cooking gained acceptance in institutions particularly, with substantial loads coming from restaurants and kitchens in industrial plants, and from replacement of obsolete cooking equipment in hotels and large restaurants.

Commercial electric cooking load is growing steadily, particularly in sections where the responsible local sales executives have studied the market and have set themselves the task of developing it. In such locations very successful heavy-duty installations have been made in recent years. I have just had the opportunity of going over very complete reports of two of these recent installations which are typical of many others.

An outstanding one is the all-electric kitchen installed by H. L. Green Company in Philadelphia. In 1936 the H. L. Green Company decided to build a new unit at 10th and Market Streets, Philadelphia. It was to be a moderate-priced variety store consisting of a main floor and basement with a restaurant located at the rear of the main floor. The new store installed the latest type of recessed direct lighting and a modern air conditioning plant.

After many weeks of research in the field of electric cooking the H. L. Green Company decided to install an all-electric kitchen for the restaurant of their new store. Naturally Philadelphia Electric Company followed this job closely through every step of its development. In conjunction with the owners and equipment dealers they arranged to run a complete test. The test was to include a definite breakdown of electric cooking as to costs, quality and efficiency.

The restaurant seats 95 customers at five elliptical counters, serves breakfast and luncheon six days a week, and caters to an average of 1,800 people a day.

The menu features a 20 and 25 cent platter, including a meat, two vegetables and biscuits with butter. Coffee, dessert, and soup are extra. With the exception

of the summer months, the most popular platter is fried oysters, 1,000 to 1,500 of which are served per day.

In order to secure definite information on the operating characteristics of the store and restaurant, test killowatt-hour and demand meters were placed on each piece of electrical equipment in the kitchen and service counter, and on the store lighting and air conditioning. The test was conducted over a 10-month period from November 1, 1936, to September 4, 1937. It was therefore conducted during the Christmas rush as well as in the summer period with air conditioning.

The following is a summary of the average monthly statistics of the restaurant fuel costs:

(a) Average number of customers served 44,064
(b) Average consumption ..... 8,626 kwhr
(c) Average increment cost of current $91.36
(d) Average cost of current per customer served ..... .207¢
(e) Average cost of current per dollar of customer revenue... 1.07¢

The connected load of the cooking equipment is approximately 80 kw, which produces a peak on the cooking equipment alone of only 40 kw. This equipment, however, adds only 29 kw to the total billing demand of the store.

Here is an installation which, like many others, has definitely proved the outstanding advantages of electric cooking. It has done a superior job of producing good foods easily and has proved so satisfactory that H. L. Green Company has given the electric equipment newspaper advertising as a means of increasing sales.

Another interesting installation is that in the "Casa Lorenzo." Let's go to the report of Buffalo Niagara Electric Corporation for the story. "Casa Lorenzo" was just plain Lorenzo's Restaurant in 1935, a modest Italian-American eating place with a little old country atmosphere, located at 386 Pearl Street, Buffalo.

Like many restaurateurs, the proprietor had been hanging on waiting for business to pick up so he could make some improvements. From 1935 to date Lorenzo's has gone through a complete transition.

The business had outgrown the kitchen. Kitchen conditions were almost unbearable, especially in the summer, due to the high humidity and temperature caused by the steam tables, coffee urns, dishwasher, gas burners, and the intense heat from the ranges. Instead of a normal tapering off of business during the summer of 1936, this newly air conditioned restaurant held up almost to winter average; which further aggravated the conditions in the kitchen. The help complained and demanded some relief before the next summer. This started the ball rolling and Lorenzo began to make studies to see what could be done. The electric utility people camped on the job and Lorenzo installed, first a small roll warmer, then an electric dry heat table, and finally, to make a long story short, a complete electric kitchen went in.

An eight months' test showed that 158,515 meals were served, using 160,070 kilowatt-hours, which accounted for 62 per cent of the total use. This average rate per killowatt-hour was 1.084 cents. Since the 1,009 watt-hours were used per meal, the electric service cost was 1.09 cents per meal. And here are some more interesting facts:

(1) This customer's load factor had been reduced appreciably by the air conditioning equipment. The addition of electric cooking corrected this condition.

(2) The ratio of connected load to demand has increased since the installation of kitchen equipment.

(3) The cost per kwhr has been stabilized since the kitchen equipment was installed.

Among other benefits of this electric cooking equipment from the customer's standpoint are the following:

1. General improvement in the appearance of food.
2. General improvement in working conditions.
3. Saving in over-all operating costs.
4. Substantial saving in frying fat.
5. Substantial meat shrinkage saving.
6. These items have made possible a 6% to 8% saving in total food costs.
7. Less man hours in the kitchen.

Food costs prior to the electric installations were running between 49 per cent and 52 per cent of sales; at the conclusion of two months' electric operation they had dropped to between 41 per cent and 43 per cent of sales.

The customer said:

"After several months' experience with this equipment, I feel sure that, if other people in the food service business knew the things which we have found out, they would *all* be using electric cooking equipment."

It is obvious from case studies such as these that there are many real advantages to the user of commercial electric cooking. Some of these can easily be evaluated in terms of dollars and cents, but many of them, very real though they are and attested to by users, are hard to evaluate.

In our Company we recently had occasion to prepare a story on the advantages of electric cooking equipment for a proposed new hospital, which will have to provide cooking facilities for 1,000 patients and employees. We knew that a great deal of weight would be given to actual electric operating costs versus gas costs, and cheap natural gas is available. In the presentation therefore, we stressed savings as one of the benefits of electricity versus fuel, as we went along. We also knew that a great deal of consideration would be given to first cost of equipment, so that a selling job had to be done on this.

In order to show the superiority of the electric way and that we really have something to sell, I am going to draw, at some length, on the material prepared for presentation to this customer. While this story was based on a hospital installation, its essentials are the same for any other heavy-duty job.

For the next few minutes let's suppose you are the customers responsible for this installation and I am going over a sales presentation with you to get you to decide in favor of electricity.

In planning a kitchen for the modern institution that the Blanktown State Hospital will be, naturally every effort will be directed toward providing the best and most economical system of preparing foods. Under present-day standards, this means EQUIPPING THE KITCHEN ELECTRICALLY, because the electric method assures:

Maximum economy—saves food, labor costs
More healthful and nourishing foods—foods retain natural flavors
A comfortable kitchen—cool, does not waste heat
Safety—no flames or fumes
Cleanliness—no soot or smoke
Long life of equipment—sturdy, built for heavy loading
Speed—heat is applied at point of utilization
Flexibility—employs specialized units; sections are individually controlled

By installing flame-heated cooking equipment in an otherwise modern institution, those responsible are risking criticism and condemnation when, in a few years, the installation will probably be worn out or obsolete, and will have to be replaced. On the other hand, by specifying electric equipment, they are

providing an installation in keeping with the rest of the institution—building a monument of which they can justly be proud.

Economies of Electric Cooking

Costs of serving food will vary, of course, with institutions. However, the following typical cost figures indicate that raw food and labor make up the bulk of the total expense, whereas fuel costs for cooking are almost insignificant.

Raw foods	43.70%
Payroll and employe meals	29.46%
Rent	8.00%
General expense and administration	6.50%
Depreciation	3.00%
Light and power for refrigeration and ventilation	2.10%
Replacement on breakage	2.00%
Fuel for cooking	2.00%
Heat	1.74%
Laundry	1.50%
Total	100.00%

It is readily seen that an increase of as much as 200 per cent or 300 per cent in fuel costs will effect only a 3 per cent to 5 per cent change in total cost. On the other hand, since the cost of raw foods and labor represents about 75 per cent of the total, economies of 5 per cent to 10 per cent in these items will more than offset an increase of 200 per cent to 300 per cent in fuel costs. This circumstance makes the electric method of cooking not only the best, but also the most economical for producing foods in an institution, for, although electricity for cooking does cost more than coal or gas, cooking the electric way effects direct savings in raw food and labor costs, and indirect savings on other items, as shown later.

Economies Resulting from Electric Cooking

Though estimates of successful operators indicate savings ranging from 3 per cent to 10 per cent, resulting from the use of automatic electric cooking equipment, so many variables are involved that the total saving is quite difficult to determine. Standards of food, type of menu, efficiency of management—all affect such potential food losses as burnt toast, crippled runs of baked goods, under-done or over-done meats, and the amount of wasted left-overs.

But leaving these aside, there are definite savings resulting from the use of electric cooking equipment that can be quite accurately determined and evaluated.

Meats

Every cooking operation, particularly meat roasting, has a definite temperature at which best quality foods can be produced satisfactorily. In any roasting process there is, of course, some shrinkage due to the evaporation of liquids and meat juices. In an electric oven this shrinkage is minimized because of:

(1) Automatically controlled temperature
(2) Uniform distribution of heat

If oven temperatures are not uniform the juices in a roast will tend to travel from the point of higher temperature to the other side of the roast which is at a lower temperature. In an electric oven, because heat is uniformly applied from both top and bottom, temperatures are uniform and the juices tend to recede from the outside toward the center of the roast. Hence there is less evaporation and shrinkage.

In addition, because there are no fumes or products of incomplete combustion, it is not necessary to provide as much ventilation as in a flame-heated oven. Conservative figures based on unbiased tests indicate savings of from 4 per cent to 8 per cent in meat shrinkage with automatic electric ovens, over the most modern and efficient flame-heated ovens.

Fats

Fat savings resulting from automatic electric control of fat temperatures range from 25 per cent to 40 per cent, depending upon the volume and type of products fried. In the range-top method of deep-fat frying, it is quite difficult—in fact, nearly impossible—to keep fat temperatures uniform and below cracking or smoke temperatures. As a result, fat can be used only a relatively short time and then must be discarded. With the automatic electric kettle, because fat never reaches the smoke temperature, it does not crack or break down, and can be used over and over again.

Flour

Additional savings accrue in the electric bakery in the form of flour savings. Because there is less ventilation and a more uniform distribution of heat than in flame-fired ovens, bread and rolls baked in an electric oven do not lose as much moisture. Consequently they not only stay fresh longer, but less flour is needed in the mix per pound of finished product. Experience indicates that this saving in flour will amount to approximately 1/3 ounce per pound of baked goods.

Direct Labor

Labor is another item of expense which accounts for a large portion of the production cost of food served. The word, "automatic," in itself signifies the elimination of certain human attention and supervision. In the electrically equipped kitchen, less labor is needed to perform any cooking operation, because time normally required for supervision can be used for other kitchen duties. This is particularly true in the roasting and baking departments, where with gas equipment, because of uneven oven temperatures, shifting and turning are necessary. Electric ovens can be loaded, and because of the very uniform temperature, the roasting or baking process becomes one of timing only.

In addition to this saving in labor, less help is needed in cleaning pots and pans and equipment, as well as the kitchen itself. This is because the electric way of cooking involves no smoke or soot, the by-products of incomplete combustion common to all flame-heated equipment. Moreover, fewer pots and pans are used because electric methods include the use of specialized self-contained equipment. And the fact that electric equipment is compact and requires less space, minimizes lost motion and saves additional labor in the kitchen.

Better Employe Health

Room temperatures in gas-equipped kitchens run high, often ranging from 110° to 120°. Because of these high temperatures and the fumes resulting from incomplete combustion, high labor turnover and lost time due to illness are minimized because the electric kitchen is cool and comfortable. There are no unnecessarily high temperatures in the cooking units themselves, since the heat is distributed uniformly by applying it directly to the points of utilization. Further, the units are insulated so that the heat is confined largely to the equipment itself.

Not only is the electric way the best way of preparing foods, but when these definite savings are taken into account, it is also the cheapest way.

Intangible Savings

In addition to the direct savings, there are many intangible, but very real, savings resulting from the use of electric cooking equipment.

Space

Every square foot of floor space in an institutional kitchen represents an in-

vestment in dollars that can be charged only to the cost of producing meals. Electric equipment, because of its compactness, provides more cooking capacity per square foot of floor space occupied than does any other type of equipment. For instance, a gas range requires one-half again as much space per unit of cooking top area as does an electric range. Then, too, in the electric kitchen, because of specialized units, the cooking tops are relieved of much of the load they handle in the gas kitchen. Consequently, less cooking top space is required. Using specialized units, fewer pots and pans are necessary, and as a result, storage space is saved.

Maintenance

Accurate records show maintenance costs on electric equipment to average approximately 1 per cent of the investment price, as compared to a low of 2 per cent for gas equipment of the most modern and efficient type. This saving in maintenance more than balances the difference of 30 per cent in the initial cost of electric as compared with the most modern gas equipment. These savings are due to the sturdy construction of electric equipment, coupled with automatic control and uniform distribution of heat. Because there are no excessively high temperatures such as are common to flame-heated units, sagging range tops and burnt-out oven linings are not known.

In institutions such as the Blanktown State Hospital, equipment must be selected that will stand the abuse of heavy loading. Compact design and sturdy construction make electric equipment ideally suited for this type of service. The fact that electric equipment has been generally adopted for marine service is evidence of its sturdiness and dependability.

Depreciation

Experience of users indicates that electric equipment has at least twice the life of its flame-heated counterparts. There are many installations in all parts of the country where electric ovens and other equipments have been in use for as long as 20 years, and are still giving satisfactory service. One electric kitchen in use over 10 years was sold for more than one-third of its original purchase price and is still operating satisfactorily in its new location five years later. One restaurant chain some years ago installed two kitchens, one equipped electrically, the other with flame-heated equipment. At the end of three and one-half years the flame-heated equipment had to be replaced. Now, after nine years of continuous service, the electric equipment is still operating efficiently and satisfactorily. Although electric equipment costs about 30 per cent more initially, its long life as compared to flame-heated equipment makes it cost less per operating year.

Safety

Fire is a constant source of concern and an expense threat in any kitchen. Liability claims and lost time, with their accompanying costs, are avoided in the electric kitchen. Gas and flame-heated equipment, because of open flames, are a constant hazard. This is particularly true of deep-fat frying equipment. One hotel manager, who a few years ago purchased an electric deep-fat fry kettle, said: "The safety factor alone of electric fry kettles would most certainly justify an investment of many times their cost. I would not consider the use of any other fuel for this cooking operation."

Flexibility

Hospital cooking operations are somewhat different from those of other food service establishments. Hospitals are not always occupied to capacity. With gas or coal-fired equipment it is often necessary to fire or heat up either the entire cooking system or a large part of it in order to produce small amounts of food. Because of specialized equipment and individual control of sections, electric equipment provides the most economical operation for varying degrees of occupancy.

Now let us leave this discussion of the advantages of electric cooking. What do these things we have been discussing add up to? What is the commercial electric cooking situation?

Well, one thing is that the use of commercial electric cooking equipment is definitely in the customer's interest. In selling electric cooking we are not selling a luxury to the food service industry, but a better service and one that, all things considered, is a cheaper service. That means that we really have something to sell.

Another point is that the cost of heat is by no means the total cost of preparing a meal—it is only a minor cost. But the way the heat is produced can have a large effect on the over-all food production costs.

A third fact is that this type of load is a desirable type of load for the utility —load that can be served profitably and that, in most cases, can be gotten at a satisfactory sales cost.

Fourthly, there is a big potential market and it has been developing at a good rate. Every influence on this market is tending to broaden it. The growth of this market is given a new impetus. Every time a utility increases its commercial cooking promotion, every time a manufacturer brings out a new or improved piece of equipment, every time increased sales make possible further reductions in equipment costs and electric rates, every time another installation adds a satisfied customer with his word-of-mouth advertising.

What can you do about it? I don't pretend to know. I do know that in our case commercial cooking meant almost nothing to us a few years ago. But we went after the promotion of the counter appliances and found their advantages to the customer to be so real that we had no serious difficulty in selling their use in an area which has an abundance of cheap natural gas and bituminous coal. Now we are beginning to cast our eyes toward the heavy-duty equipment market.

What can you do about it? The answer to that you know best. But you can do *something* about it with advantage to all concerned, because electric cooking is going to town!

Value and Characteristics

(*Continued from page* 170)

classes of business is no reason why this practice should be followed in all cases. The public has certain rights and certain desires which a utility should recognize and strive to accomplish, remembering that after all in this democracy of ours the will of the public becomes the law of the land. Also, in the words of numerous judges, the determination of rates is not an exact science and thus judgment must be exercised in their determination. With all these thoughts in mind it appears that only one conclusion can be reached, namely, that of doing our level best to satisfy the public in service and rates, resorting to a refusal to do either only when every known effort to accomplish this has been exhausted.

Measures for Relief of Physical Illness

By Noel Gates Monroe, M.D.

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As typical of the incidence of disabling sickness, we might quote the U. S. Public Health Reports for a large group of reporting industrial plants chiefly east of the Mississippi River for the first half of 1937.

Total disabling sickness was at the rate of 106 per 1,000 men. The respiratory group accounted for a rate of 57 per 1,000 men. The nonrespiratory group accounted for a rate of 49 per 1,000 men. Of the respiratory group the major portion of the disabilities are due to the common cold and its sequelae.

There is little new in the treatment of colds. Certain household remedies and all sorts of remedies purchasable on drug store shelves are of very little value, and usually upset the stomach or cause excessive purging, and generally are apt to do more harm than good.

In the *Annals of Otology, Rhinology and Laryngology* issue of September, 1936, Dr. E. C. Sewell sets forth a theory with regard to the common cold, which is worth consideration. He says, in effect, that a person who has a chronic sinusitis is the carrier of the common cold. That such a person by sitting in a draft, or by chilling or by other indiscretion may get a "false cold." This "false cold" may progress into a common infectious cold if his resistance is low, and from thence he may spread his infection about him to all who come in fairly intimate contact with him. The person who acquires a "true cold" from the cold carrier gets a definite immunity for a period, whereas the carrier himself gets no immunity at all. This theory seems to fit conditions and it is probably the true explanation of the spread of the common cold.

As a matter of fact, a cold in itself is not of much consequence, but the complications of a cold, namely: bronchitis, middle ear infections, mastoid infections, pleurisy, and so forth, are serious, and are to be avoided if possible.

What general procedure should be followed when one has a cold?

1. The nasal and mouth secretions should not be broadcast to the general populace.

2. If you think that you have a temperature, see your medical advisor or the nurse.

DR. MONROE

3. If you have a temperature, you should be abed where you may get over your cold without complications.

4. If you have chronic sinusitis, you must for your own sake and for the sake of your working mates have specialized treatment to rid yourself of the infection.

This is the fifth of a series of articles on Medical Service in Industry, prepared by the Subcommittee on Health, of the Accident Prevention Committee, E.E.I., composed of: Dr. Hart E. Fisher, Chicago; Dr. Noel G. Monroe, Boston; Dr. J. J. Wittmer, New York City; Professor Morris S. Viteles, Philadelphia and Wills Maclachlan, Toronto, Ont., Chairman.

These articles will appear monthly in the BULLETIN *and will present different phases of the types of assistance that can be given to industry by the Medical Profession.*

The Subcommittee will welcome comments and discussion of these articles. These comments should be addressed to the

SUBCOMMITTEE ON HEALTH
Edison Electric Institute
420 Lexington Ave., New York, N. Y.

It is believed that a physical hardening process helps to prevent colds. If you can shiver through the first few chilly days of fall without changing underwear, your skin will become accustomed to the cold. From then on less clothes can be worn, with less consequent sweating and less liability for chilling. In other words, the physical resistance to low temperatures can be increased.

Some out-of-door exercise is recommended for those who work indoors. For those who must work out of doors, it is essential that the feet be kept dry and warm, and that the outer clothing be removed when doing muscular work, and replaced while resting or riding to the next job. Good and generous food is most essential during the winter season, but overeating or overdrinking and loss of sleep are to be avoided.

The nonrespiratory group of diseases, causing disabilities at the rate of 49 per 1,000 afford greater opportunity for relief. Of this group, appendicitis and hernia, causing respectively 4.6 and 1.8 disabilities per 1,000 men, are readily cured by surgery.

The rheumatic group of 9.7 per 1,000 men is a fertile field for relief measures. Very early diagnosis is most essential because in the early stage there is but little deformity of the parts or but little loss of function. A period of bed rest, removal of infected teeth or tonsils and dietary measures will often result in marked relief of symptoms, and sometimes may result in permanent arrest of the disease. The surgical correction of deformity promotes physical efficiency and well being.

Among the digestive diseases which cause 8.1 disabilities per 1,000 men, the following rank, in order, as causative of lost time. They are discussed briefly in sequence.

1—Appendicitis
2—Constipation (real or fancied)
3—Gastric or duodenal ulcer
4—Colitis or irritable colon

1. Acute abdominal pain should never be self-treated. There is great likelihood that the cause may be appendicitis, and your doctor should prescribe the appropriate treatment.

The wave of emergency operations for appendicitis has largely subsided

these past few years, so that nowadays the appendicitis suspect is hospitalized and studied carefully, with the result that many are not operated upon and many more actual cures are effected.

2. Constipation is a condition rather than a disease, but nevertheless the average person lays great stress on his bodily elimination, and if he thinks there is failure of this function, he promptly begins to dose himself, with the result that he is soon a victim of the laxative habit, which is even less desirable than the constipation. No diagnosis of constipation can be made in a patient who has a bowel movement either thrice daily or once in three days. However, many times there is an organic basis for constipation, and medical advice should be sought as to the cause and relief of the condition. Many a man with cancer of the rectum has treated himself for months before he "tried the doctor" and then it was too late.

The use of drugs has been almost eliminated in the treatment of constipation. Dietary and hygienic measures and lubricants by mouth will generally combat this situation.

3. Medical treatment of gastric ulcer with diet and alkaline powders has been pretty well standardized, but one important feature of the treatment has not been stressed, and that is, that tobacco in any form should be absolutely denied the stomach ulcer patient.

4. Colitis, or irritable colon, is a condition much more commonly encountered in the past few years than formerly. There can be no doubt but that much of the abdominal distress formerly called various types of indigestion is colitis of one grade or another. Treatment with a concentrated diet and drugs of the atropin group will usually suffice to keep this condition under control.

Next in order of importance in the nonrespiratory group are diseases of the heart and aorta, with a rate of 4.2 disabilities per 1,000 men. For the most part, these diseases occur in the older men. The fact that thousands of people are now leading useful and productive lives, those people whom the insurance companies declined as bad risks twenty to thirty years ago because of heart murmurs, indicates that heart murmurs and even more serious types of heart impairments are not necessarily disabling when intelligently handled by adequate medical supervision and perhaps by change of job to something less strenuous. Hence the usefulness of valued employees may be prolonged by many years.

The genito-urinary group causes a rate of 2.4 disabilities per 1,000 men. Since most reporting industries exclude mutual benefit payments to patients with venereal disease, this figure probably is a true picture of non-venereal genito-urinary disease. Probably prostatic difficulty accounts for most of the disability.

Inflammation of the prostate is an exceedingly common condition. It should always be suspected when there are urinary difficulties or low down abdominal pain. A rectal examination by your physician will at once give the diagnosis, and simple massage for a few weeks will usually bring a most dramatic relief of symptoms.

Diseases of the skin cause a rate of 4.0 disabilities per 1,000 men.

Here again is a fertile field for preventive and relief measures. Much skin irritation can be traced directly to some product used either at work or at home. If a patch test is made of all suspected offending materials, the villain can usually be trapped. Proper protection of the skin with gloves or with oils or waxes, or certain soapy materials will keep rashes to a minimum.

A few skin rashes are immediately recognized as syphilis, but this great scourge is hidden among all the other forms of disability which have been discussed. In my own utility, I know that seventeen of our present employees, or approximately one-half of one per cent, have had in the past manifestations of syphilis, but sufficient treatment has arrested the disease. There must be five times this number of known cases among us. This is a stupendous figure! Only when industry recognizes the terrific cost of plant wreckage due to the faulty judgment of some syphilis-maddened employee will the true state of affairs be known. Cure is certain in the first year or two of the disease. Arrest of the disease by adequate treatment is almost sure at whatever stage it is discovered. In the past twenty-five years pulmonary tuberculosis has decreased to such an extent that it is confidently expected to vanish from the United States in the next fifty years. Certainly the same may be said of syphilis when the same public health consciousness is attached to it as was applied to tuberculosis a decade ago.

Lastly may I implore all to have an annual physical examination. Industry buys coal and other materials on standard specifications. Millions are spent for periodic overhaul of turbines and generators, but for the most part industry buys labor by "the looks" and not by medical specifications. Then she turns these men loose for a 30-40-50 year period without any provision for a periodic overhaul. If it is good business to overhaul turbines, it is also good business to overhaul the men who run these turbines.

Certainly no great forward step can be made in the prevention of disease, the increase of the length of life or the maximum efficiency of our man power unless that man power has periodic physical examinations. Diseases cannot be relieved or cured until they are discovered. When symptoms arise it may be too late, but the periodic physical overhaul will catch many conditions which may otherwise wreck the "human turbines" who ARE our industry.

Plant Coordination Committee Releases Report

THE JOINT COMMITTEE on Plant Coordination of the EEI and Bell System has approved for distribution the following three reports prepared by the Joint Subcommittee on Development and Research:

Engineering Report 40—Inductive Coordination of Rural Power and Telephone Systems. In the coordination of telephone and power distribution systems in rural areas the conditions encountered differ in a number of respects from the corresponding conditions in urban areas. This report presents the results of a study of these conditions, including field measurements of rural power system wave shape and telephone circuit noise under a variety of operating conditions, supplemented by a theoretical discussion of the factors affecting the inductive influence of rural circuits.

Methods are presented for estimating the harmonic ground-return currents and I.T product of various types of rural power circuits. Coordinative measures which have been found applicable to the power and telephone circuits are described, and test data are included to indicate their effectiveness.

Provisional Report 21—Instruments for Measurement of Telephone Circuit Noise and the Telephone Influence Factor of Power System Wave Shapes. This report contains descriptions of visual indicating instruments developed for the purpose of measuring telephone circuit noise and the telephone influence factors of power system voltage and current waves. The instruments embody the principles set forth in Engineering Reports Nos. 32 and 33, "Relative Interfering Effects of Single Frequency Noises in

(*Continued on page* 184)

Standards of Living

Notes for an Article

By Gerard Swope
President, General Electric Company

Reprinted from the *Atlantic Monthly*, with permission of author and publisher

[In the course of a recent trip to Europe, Mr. Swope, President of the General Electric Company, made some swift comparisons of the standards of living on the Continent and in the United States. His notes seemed so pertinent that the *Atlantic* asked for the privilege of printing them without delay.—THE EDITOR]

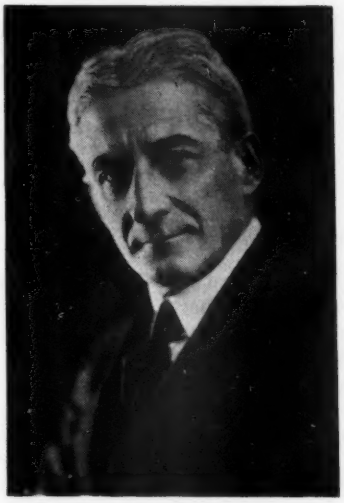
I

CONDITIONS in England are good. Business is prosperous, large in volume and profitable in operation. There is no social unrest, no acute labor troubles. The work week is 47 hours, and rates of pay are more or less stabilized. Taxes are high, but the budget is balanced. Changes in fiscal and industrial policy have been made gradually over a long period of years and are generally accepted by all.

Across the Channel, in France, radical changes were made in rates of pay and hours of work (40 hours per week), which industry was not able to absorb so rapidly. As a result, costs rose, consumption fell, and unemployment grew, with an accompanying social unrest which has not been allayed, and in consequence industrial activity has not been resumed. Since I was there, there has been a distinct movment to modify the original decrees, both in length of work week and in rates of pay.

Elsewhere in Europe, even in the discussions of the International Labor Board at Geneva, there is practically no agitation for a shorter work week, which throughout Europe, with the exception of France, is 47 hours and longer.

Here in the United States, over a period of time and particularly recently, we have made rapid changes in the reduction of the work week and increased rates of pay, which industry has been able to absorb through the simplification of designs, better methods and greater mechanization of industry, and the ingenuity of management. Changes in a complex and far-flung organization must be made gradually, if they are to be absorbed without increasing costs and selling prices. As an example of our progress, in the short space of my own active



MR. SWOPE

working life there have been great changes. When I started work in 1895, our work week was 56 hours at 12½ cents an hour, or $7.00 a week. Today a young man of about the same grade would work 40 hours (25 per cent less) and receive 70 cents an hour, or almost six times as much. The General Electric Company went to a five-day week in 1931, for both offices and factories. Incidentally, the Exchange in England is on a five-day week.

The wages and hours bill now being considered by Congress would not affect the hours or the wage rates of any employee in any large industrial establishment, such as the General Electric Company. But it would affect these matters radically, and too rigidly, in certain sections and in smaller companies. The administration of such a law would be costly—indeed I doubt if it would be possible to administer it fairly and with efficiency.

Every country in Europe has what we know as a Social Security law, but these laws are all on a contributory basis, with contributions by the government, the employer, and the employee.

I believe in unemployment insurance, as I have testified, but I prefer a contributory system in this country, with both the employer and the employee participating, and I believe particularly in the encouragement of industry to stabilize or guarantee employment, as much more important. Both these factors—contributions by employer and employee, and the encouragement of stabilization of employment—are present in the laws of some of our states, but unfortunately neither is present in the laws of the State of New York.

I also believe in old-age pensions. We have a Federal system, which is on a contributory basis, fifty-fifty between employer and employee. I am a member of the Senate's Advisory Council, appointed as a result of Senator Vandenberg's questions, to consider amendments to the law. I think the law can be broadened with advantage, to cover employees of educational and philanthropic institutions not now covered, domestic servants, and to a certain extent agricultural workers; and I think the law can be simplified and modified in other respects also. It has been declared constitutional, and I am not one of those who think that it will be repealed, but it may be amended.

II

When in Europe, of course I was interested in the living standards in the different countries that I visited, as compared with those in the United States. These are difficult, if not impossible, to compare on a monetary basis, as the currencies of some of the foreign countries are either partially or completely subject to exchange restrictions, so a comparison of this character would result in no valid conclusions. Therefore I made a study of how long an average workman, in certain industries, would have to toil to pay for a year's shelter (rent)—not a uniform standard of shelter, but shelter. The number and size of rooms, and the conveniences offered, vary greatly in different countries, especially when compared with our own; but the important thing is the length of time a workman

has to toil to provide shelter for his family for a year, no matter what that shelter may be; and this shows no great variation.

The following tabulation shows the number of months a man must work in the eight countries I visited, and the United States, to pay for his year's rent, and the percentage of his year's income this rent represents.

	Number of months' work required to pay year's rent	*Percentage of year's income*
Country No. 1	2.1	18%
" No. 2	2.6	22
" No. 3	2.8	23
" No. 4	2.2	18
" No. 5	3.2	27
" No. 6	3.9	33
" No. 7	3.2	27
" No. 8	2.5	21
United States	2.2	18

In the United States, therefore, a man works 2.2 months (representing about 18 per cent of a year's income) to provide for a year's rent; in European countries the time varies from two to four months (representing from 18 per cent to 33 per cent of a year's earnings).

Clothing was too varied, it seemed to me, to make any valid comparisons; but on the principal articles of food, such as milk, eggs, bread, butter, and beef (not that these articles of diet are used to the same extent by the families of workmen in different countries, but in all the countries these staples are used in varying degrees), a comparison could be made to show the varying cost in hours of work to procure these five important food items.

	Number of hours' work required to purchase a unit of five food items
Country No. 1	4.9
" No. 2	7.2
" No. 3	4.25
" No. 4	6.1
" No. 5	5.0
" No. 6	4.6
" No. 7	6.2
" No. 8	7.3
United States	1.7

In the United States, therefore, to purchase a unit of these five items, a man must work 1.7 hours, while in the country that is nearest in this regard a man must work 4¼ hours, or two and one-half times as long, and in one country a man must work over 7 hours, or more than four times as long.

But a startling contrast between conditions in other countries and our own is seen in the way people travel to work. In our country, one of the problems in our factory towns is to provide fields for parking the automobiles of thousands of workmen. In Europe they have no such problem, as the workmen use bicycles, which are much more easily stored, or they use the tramways, or walk. As a matter of fact, in no other country but the United States, from the standpoint of earnings, can a workman afford to buy a new car, even of the lowest cost.

	Number of months' work required to purchase an automobile
Country No. 1	18.0
" No. 2	20.2
" No. 3	8.5
" No. 4	12.1
" No. 5	10.5
" No. 6	14.8
" No. 7	24.0
" No. 8	22.5
United States	4.5

In the United States, on the average, it requires 4½ months' work to pay for an automobile, and in the nearest European country a man must work 8½ months for it, and in one country 24 months, or two years. These figures themselves show how impossible it would be for a workman in those countries to buy a car, even on a time-installment plan, as it would be worn out before he could pay for it.

Another article in general use in the United States is the electric refrigerator.

	Number of months' work required to purchase an electric refrigerator
Country No. 1	2.5
" No. 2	2.9
" No. 3	2.4
" No. 4	2.4
" No. 5	2.7
" No. 6	3.0
" No. 7	7.3
" No. 8	6.3
United States	1.0

For a radio set, the figures are as follows:—

	Number of months' work required to purchase a radio set
Country No. 1	.9
" No. 2	.5
" No. 3	.5
" No. 4	.8
" No. 5	.4
" No. 6	1.5
" No. 7	.8
" No. 8	.9
United States	.2

Interestingly enough, on radio the question of government policy is involved, because certain governments have said that simple low-priced sets must be furnished to all citizens in order that everyone may listen to the words of the officials. Therefore the prices of radios in those particular countries are much lower, in comparison with prices on most other articles.

Finally I take a unit of small cost, one which adds greatly to the comfort and convenience of living—the use of electricity. Electric supply in Europe is sometimes in the hands of private enterprise, sometimes in the hands of the municipality, and sometimes in the hands of the state. Here, then, is a comparison of the length of time a man must work to purchase one kilowatt-hour of energy —that is, sufficient energy to light twenty fifty-watt incandescent lamps for one hour, or the equivalent.

	Number of minutes' work required to purchase one kilowatt-hour of energy
Country No. 1	24.0
" No. 2	30.0
" No. 3	18.0
" No. 4	18.0
" No. 5	18.0
" No. 6	12.0
" No. 7	30.0
" No. 8	43.0
United States	3.6

In the United States a man must toil 3.6 minutes to provide for one kilowatt-hour of energy; in the nearest European country he must work 12 minutes, or over three times as long, and in one country he must work 43 minutes, or twelve times as long. In this country, generally, the development and distribution of electrical energy have been in private hands, and the problem of making it available to more and more millions of homes has been given constant study, so that now over 22,000,000 homes are electrically connected. The increase in use and the resulting conveniences are apparent on every hand.

The comparative figures on incandescent lamps are of interest:—

	Number of hours' work required to purchase an incandescent lamp
Country No. 1	1.8
" No. 2	2.5
" No. 3	1.3
" No. 4	1.2
" No. 5	1.4
" No. 6	2.4
" No. 7	3.4
" No. 8	2.0
United States	.2

These are sufficient indications, from the standpoint of the workingman, that if we do not endeavor to make progress too rapidly we may have faith in the future.

Program

E.E.I. Engineering Committee Meetings

Edgewater Beach Hotel, Chicago, Illinois
May 2-4, 1938

ACCIDENT PREVENTION COMMITTEE

L. M. SHADGETT, Chairman

May 2—9:30 a.m.—Suite 247

Statistics
W. A. BUCHANAN (for C. R. Beardsley) Appalachian Elec. Power Co., Welch, W. Va.
Low Voltage Hazards
E. W. GORRY, Consolidated Edison Co. of N. Y., New York City.
Rubber Protective Equipment, Line Hose, Linemen's Pigs, Etc. Rubber Gloves
M. F. SKINNER, Brooklyn Edison Company, Brooklyn, N. Y.
Public Safety, Electric Fences, Miscellaneous
H. J. BURTON, Consumers Power Co., Jackson, Michigan.

May 2—2:00 p.m.—Suite 247

Employee Health
WILLS MACLACHLAN, Toronto, Canada.
Office Hazards
E. R. KROPP, Union Elec. Co. of Missouri, St. Louis, Mo.
Employee Training
A. S. BENNION, Utah Power & Light Co., Salt Lake City, Utah.
Principles of Hold Off
D. C. STEWART, Buffalo, Niagara & Eastern Power Corp., Buffalo, N. Y.
Line Hazards (Linemen's Handbook, Miscellaneous)
E. C. RUE, Boston Edison Company, Boston, Mass.
Traffic Hazards (Defective Vision of Drivers, Miscellaneous)
C. N. RAKESTRAW, Cleveland Elec. Illum. Co., Cleveland, Ohio.
Hazards Due to Use of CO_2 Fire Extinguishing Equipment
G. S. DIEHL, Pennsylvania Water & Power Co., Baltimore, Md.
National Safety Council Affairs
R. M. GODWIN, Philadelphia Electric Co., Philadelphia, Pa.
Affairs of AIEE Committee on Safety
WILLS MACLACHLAN, Toronto, Canada.

May 3—9:30 a.m.—Suite 247-8

Reports of Contact Men with Other E.E.I. Committees—Transmission and Distribution
E. C. RUE, Boston Edison Co., Boston, Mass.
Insurance and Accounting
E. R. KROPP, Union Elec. Co. of Missouri, St. Louis, Mo.
Electrical Equipment
D. C. STEWART, Buffalo, Niagara & Eastern Power Corp., Buffalo.
Prime Movers and Hydraulic Power
G. S. DIEHL, Pennsylvania Water & Power Co., Baltimore, Md.
New Ideas and Devices
New Business

May 3—2:00 p.m.—East Lounge

Joint Meeting with Electrical Equipment and Transmission & Distribution Committees. (See below)

ELECTRICAL EQUIPMENT COMMITTEE

J. F. FAIRMAN, Chairman

May 2—9:30 a.m.—East Lounge

Closed Session (Only Committee Members and representatives of E.E.I. Member companies are invited to this session.)
Oil Fire Reports
R. N. CONWELL, Public Service Elec. & Gas. Co., Newark, N. J.
Apparatus Trouble Reports
C. A. CORNEY, Boston Edison Co., Boston, Mass.
Oil Circuit Breakers (EEI-AEIC-NEMA Joint Committee Report)
R. W. WILBRAHAM, United Engrs. & Constructors, Philadelphia.
Bushing Troubles
R. W. WILBRAHAM, United Engrs. & Constructors, Philadelphia.
Oil Circuit Breaker Trouble
H. L. WALLAU, Cleveland Elec. Illum, Co., Cleveland, Ohio.

Foreign Practice Group

A. H. LAWTON, Chairman

Progress Reports on Assigned Subjects
A. V. DEBEECH, Canadian and General Finance Co., Toronto, Canada.

May 2—2:00 p.m.—East Lounge

Open Session (Visitors Welcome)

Meters and Services Division

A. E. SILVER, Chairman

Progress Reports of Meters and Services Subcommittee
A. J. ALLEN, Consolidated Edison Co. of New York, New York City.

(Meters and Services Subcommittee Meeting—May 2—9:30 a.m. (Room to be announced)

Apparatus and Design Division

H. L. WALLAU, Chairman

Rotating Electrical Machinery
R. W. WILBRAHAM, United Engrs. & Constructors, Philadelphia.
Manufacturer Reports
D. M. JONES, General Electrical Company, Schenectady, N. Y.
S. H. MORTENSEN, Allis Chalmers Mfg. Co., Milwaukee, Wis.
C. A. POWEL, Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
Station Design and Modernization
H. B. WOOD, Stone & Webster Engineering Corp., Boston, Mass.
L Street Station Modernization
C. A. CORNEY, Boston Edison Company, Boston, Mass.
Progress Report on Generator Insulation Testing
B. VAN NESS, JR., Pennsylvania Water & Power Co., Baltimore, Md.
Results of Buss Protection Questionnaire
H. L. WALLAU, Cleveland Elec. Illum. Co., Cleveland, Ohio.
Status of Relay Standardization
H. L. WALLAU, Cleveland Elec. Illum. Co., Cleveland, Ohio.
Disposition of Noise Standards
H. L. WALLAU, Cleveland Elec. Illum. Co., Cleveland, Ohio.

Utilization Division

J. H. FOOTE, Chairman

Progress Reports on Current Work
J. H. FOOTE, Commonwealth & Southern Corp., Jackson, Mich.

May 3—9:00 a.m.—East Lounge

System Engineering Division

R. A. HENTZ, Chairman

Nominal and Emergency Ratings—Progress Report
F. D. WYATT, United Light and Pwr. Engrg. and Constr. Co., Kansas City, Mo.
System Generating Capacity Reserve—Progress Report
H. C. FORBES, Consolidated Edison Co. of New York, New York City.
Basis of Investment for Increased Reliability—Analysis of Replies to Recent Canvass of Committee Members
R. A. HENTZ, Philadelphia Electric Co., Philadelphia, Pa.
Continuing Property Records—General Discussion
Fundamental System Planning of American Gas and Elec Co.
PHILIP SPORN, American Gas and Elec. Service Co., New York City.

Operating and Maintenance Division

H. S. FITCH, Chairman

Storage Battery Subject Committee—Progress Report
O. B. BENSON, Boston Edison Co., Boston, Mass.
Progress Report on Rehabilitation of Insulating Oil
H. S. FITCH, West Penn Power Co., Pittsburgh, Pa.
Report on Rehabilitation of Flood Damaged Equipment
H. S. FITCH, West Penn Power Co., Pittsburgh, Pa.

May 3—2:00 p.m.—East Lounge

Joint Meeting with Accident Prevention and Transmission & Distribution Committees. (See below)

HYDRAULIC POWER COMMITTEE

E. B. STROWGER, Chairman

May 3—9:00 a.m. and 2:00 p.m.—Sheridan Room

Cost Data, Hydro-Elec. Plants
Relation Between Flood Control and Power Development
L. F. HARZA, Harza Engineering Co., Chicago, Ill.
Pumped Storage—General Discussion
Dam Maintenance—Report
Drainage Systems Under Dam
W. P. CREAGER, Buffalo, N. Y.

May 4—9:00 a.m. and 2:00 p.m.—Sheridan Room

Pressure Distribution on the Downstream Face of an Ogee Spillway
Cyclic Analysis of Flow Records
C. F. MERRIAM, Pennsylvania Water & Power Co., Baltimore, Md.
Reports on—
(*a*) *The Susquehanna Emergency Net.*
(*b*) *Progress of Flood Waves Down the Susquehanna River*
C. F. MERRIAM, Pennsylvania Water & Power Co., Baltimore, Md.
Model Tests of Hydraulic Structures
Automatic Hydro-Electric Stations
E. L. PETERSON, American Gas & Elec. Serv. Corp., New York City.

PRIME MOVERS COMMITTEE

W. E. CALDWELL, Chairman

May 2—9:30 a.m. and 2:00 p.m.—East Room

Committee Business
Review of Final Reports from—
Chemistry Subcommittee
C. H. FELLOWS, Detroit Edison Company, Detroit, Michigan.
Combustion Subcommittee
J. F. MUIR, American Water Works & Elec. Co., Inc., New York City.
Turbine Subcommittee
E. R. CROFTS, Rochester Gas & Elec. Co., Rochester, N. Y.
Review of Progress Report of Boiler Subcommittee
J. R. BAKER, Pennsylvania Water & Power Co., Baltimore, Md.

May 3—9:00 a.m.—East Room

Round Table Discussion of Current Design and Operating Problems.

(Members only)

May 3—2:00 p.m.

Inspection Trips

TRANSMISSION AND DISTRIBUTION COMMITTEE

H. P. SEELYE, Chairman

May 2—9:30 a.m. and 2 p.m.—Suite 259-60

Meeting of Subcommittee on Underground Methods and Accessories

J. A. BROOKS (Chairman) Consolidated Edison Co. of New York, New York City.

May 3—9:30 a.m.—Michigan Room

Transmission Group

MERRILL DEMERIT, Chairman

Simplified Transmission Line Planning
A. C. MONTEITH, Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
Design, Construction and Operation of a Lightning Proof Transmission Line
EDWIN HANSSON, Pennsylvania Water & Power Co., Baltimore, Md.
Revamping a High Voltage Transmission Line for Increased Protection Against Lightning
A. E. SILVER, Ebasco Services, Inc., New York City.
Ground Resistance Determinations in Connection with Counterpoise Installations
MERRILL DEMERIT, West Penn Power Co., Pittsburgh, Pa.
The Counterpoise
L. V. BEWLEY, General Electric Company, Pittsfield, Mass.
Expulsion Protective Gaps on Transmission Lines
D. M. BUNN, Northern States Power Co., Minneapolis, Minn.

Plant Coordination Group

W. F. DAVIDSON, Chairman

Review of the Current Cases Involving Inductive Coordination
W. F. DAVIDSON, Consolidated Edison Co. of New York, Inc., New York City.
Radio Interference Measurement
J. O'R COLEMAN, Edison Electric Institute, New York City.

May 3—2:00 p.m.—East Lounge

Joint Meeting with Accident Prevention Committee and Electrical Equipment Committee. (See below)

May 4—9:00 a.m.—East Lounge

Underground Group

C. W. FRANKLIN, Chairman

The Use of Power Factor Test Equipment for Indicating Defective Cable Terminals and Network Transformers
M. W. GHEN, Duquesne Light Co., Pittsburgh, Pa.
Impulse Tests on 24-27 Kv, Three Shielded Conductor, Paper and Lead Cable
G. B. MCCABE, Detroit Edison Co., Detroit, Mich.
A New Semi-Underground Distribution System for Evansville, Indiana
E. V. SAYLES, Commonwealth and Southern Corp., Jackson, Mich.

Standards and Specifications Group

E. V. SAYLES, Chairman

(a) Subcommittee Reports—Pole Life Records, Line Hardware, Insulators

May 4—2:00 p.m.—East Lounge

Standards and Specifications Group (Con't)

(b) Timbers—Characteristics and Use

Distribution Group

W. F. NIMMO, Chairman

Economic Design of Overhead Primaries
PAUL H. JEYNES, Public Service Elec. and Gas Co., Newark, N. J.

Round Table Discussion

(Attendance restricted to power company employes)

Status of National Electrical Safety Code Revision and Other Matters

JOINT MEETING

ELECTRICAL EQUIPMENT COMMITTEE — TRANSMISSION AND DISTRIBUTION COMMITTEE — ACCIDENT PREVENTION COMMITTEE

May 3—2:00 p.m.—East Lounge

Symposium on System and Utilization Voltages
H. P. SEELYE, Detroit Edison Co., Detroit, Mich.
J. H. FOOTE, Commonwealth & Southern Corp., Jackson, Mich.
H. COLE, Detroit Edison Co., Detroit, Mich.
H. A. ENOS, Amer. Gas & Elec. Serv. Corp., New York, N. Y.
Transformer Vault Fires and Explosions
L. W. MCCULLOUGH, Consolidated Edison Co. of New York, N. Y.
Electric Range Report
J. H. FOOTE, Commonwealth & Southern Corp., Jackson, Mich.
Water Heater Test Specifications
J. O'R. COLEMAN, Edison Electric Institute, New York, N. Y.
Principles of Hold-Off
H. S. FITCH, West Penn Power Co., Pittsburgh, Pa.
D. C. STEWART, Buffalo, Niagara & Eastern Power Corp., Buffalo, N. Y.
N. STAHL, Pennsylvania Power & Lt. Co., Allentown, Pa.
Proposed Standards for Transformers, Regulators and Reactors
F. S. BROWN, Duquesne Light Co., Pittsburgh, Pa.

DINNER MEETING OF ALL COMMITTEES

May 3—7:00 p.m.—Michigan Room

Toastmaster
H. W. EALES, Public Utility Engineering and Service Corp., Chicago, Ill.

Address
C. W. KELLOGG, President, Edison Electric Institute.
Coordination of Electric Power and Transmission Facilities in Wisconsin
L. F. SEYBOLD, Milwaukee Elec. Rwy. & Lt. Co.

Notes on the June Convention

A VERY worth while program of addresses and a series of meetings which will be of value to everyone who attends them are being arranged for the Sixth Annual Convention of the Edison Electric Institute. The Convention, as announced previously, takes place June 6 to 9 at Atlantic City, where the Institute last assembled in 1935.

While details of the program are being completed, members of the Atlantic City Reception Committee are preparing a rousing welcome and planning entertainment features which will fill each day with plenty of activity for every delegate and visitor to the Convention.

Dominating theme of the Convention will be the outlook in America for private enterprise in general and the problems now confronting such enterprise in this country, questions uppermost in the mind of every electric utility man today. Other problems, however, will not be neglected: included among them will be discussions of sales questions, sales analysis, trend of costs, advertising, accounting and employee matters. These subjects will be discussed by leaders in their respective fields who have much of value to present to their audiences.

A partial list of speakers includes Dr. Virgil Jordan, President of the National Industrial Conference Board; Dr. W. W. Cumberland, partner of Wellington & Company; President Kellogg of the Institute; Floyd L. Carlisle of Consolidated Edison Company of New York, Inc.; J. E. Davidson, Nebraska Power Company; W. H. Harrison, American Telephone and Telegraph Company; H. P. Liversidge, Philadelphia Electric Company; H. S. Metcalfe, West Penn Power Company; H. A. Snow, The Detroit Edison Company; B. S. Rodey, Chairman of the General Accounting Committee of the Institute; Walter H. Sammis, The Commonwealth & Southern Corporation, and A. H. Kehoe, Consolidated Edison Company of New York, Inc.

A number of special groups will hold meetings at the Convention apart from the general program. At least two Accounting meetings are planned for Monday, June 6. Included will be an all-day meeting of the Plant Accounting & Records Committee, with H. D. Anderson as Chairman, and a meeting of the Classification of Accounts Committee presided over by F. P. Dexter. Plans are also being considered for meetings of the Depreciation Committee, C. E. Kohlhepp, Chairman, the Customers' Relations, Commercial Accounting & Collections Committee, K. E. Boyle, Chairman, and the Purchasing, Stores and Transportation Committee, E. S. Brock, Chairman.

Monday, June 6, will be devoted to registration, committee meetings and other essential preliminaries. The President's Reception will be held on Monday evening in the Rose Room of the Hotel Traymore. The opening business session will get under way promptly at 9.30 a. m., on Tuesday, June 7, in the Grand Ballroom of the Atlantic City Convention Hall, where all sessions of the Convention will take place.

Further details of the Convention program will be announced in the next issue of the BULLETIN.

RATES QUOTED BY ATLANTIC CITY HOTELS
for the 1938 Edison Electric Institute Convention

June 6 to 9, 1938

Boardwalk Hotels Name	European Plan Rates by the Day Single Rooms with Bath		 Double Rooms with Bath	
Ambassador	$3.00	$6.00	$6.00	$10.00
Brighton	3.00	5.00	5.00	8.00
Chalfonte-Haddon Hall	3.00	8.00	6.00	10.00
Chelsea	3.00	5.00	5.00	8.00
Claridge	4.00	9.00	6.00	11.00
Dennis	3.50	6.00	6.00	10.00
Knickerbocker	3.00	4.00	5.00	7.00
Marlborough-Blenheim	4.00	6.00	6.00	11.00
New Belmont	2.50	3.00	4.00	6.00
Ritz-Carlton	3.00	6.00	6.00	10.00
Seaside	3.00	4.00	5.00	6.00
Shelburne	4.00	6.00	6.00	8.00
Traymore	3.50	10.00	6.00	12.00

Avenue Hotels Name	Single Rooms with Bath		Double Rooms with Bath	
Arlington	$3.50	$4.00	$5.00	$6.00
Colton Manor	3.00	5.00	5.00	9.00
Flanders	3.00	4.00	5.00	
Franklin Inn	3.00		4.00	5.00
Glaslyn-Chatham			5.00	
Jefferson	3.00	3.50	5.00	6.00
Kentucky	2.50		4.00	
Lafayette	3.00	4.00	5.00	7.00
Madison	3.00	4.00	5.00	7.00
Monticello			5.00	
Morton	2.50	3.50	5.00	6.00
Princess	2.50		4.00	
Senator	3.00	4.00	5.00	7.00
Sterling	2.50	3.00	4.00	5.00
Thurber	2.50		4.00	

Market Research and Dealer Sales Promotion

(*Continued from page* 120)

sales floors will become increasingly necessary.

The subject of dealer advertising is one on which we have had very little information and one which is very vital to all promotional work. In 1937 we measured the amount of advertising being done by dealers. This was accomplished very simply by having our existing personnel measure and record the appliance advertising in the newspapers. We were able to obtain a record of the amount of advertising done by appliances, by dealers and by newspapers. In this way we were able to determine the amount of advertising each dealer was doing and what type of appliance he was advertising.

This information was transposed into dollars spent by taking the column inches as run in various newspapers and applying the existing advertising rates.

The following figures indicate the amount of money actually spent by dealers over a 6-month period in advertising each type of appliance:

DEALER NEWSPAPER ADVERTISING OF ELECTRIC APPLIANCES
May to Oct. Inc., 1937

Ranges	$ 4,693
Water Heaters	69
Air Heaters	106
Refrigerators	91,134
Dish Washers	468
Washing Machines	26,328
Ironers	11,344
Radios	134,260
Vac. Cleaners	5,280
Room Coolers	1,036
Mixers	376
Sewing Machines	2,183
Small Appliances	20,734
TOTAL FOR 6-MONTHS	$298,011
ESTIMATED FOR YEAR	$600,000

As a result of this investigation, we are able to determine (1) the rank and order of appliances as to the amount of advertising done and (2) the ratio of total advertising on each appliance to the total sales of that appliance.

As an added feature in 1938, we are accumulating information as to the amount of advertising which is being done on competitive fuels.

In analyzing the amount of advertising done by groups of dealers, we are able to determine what classes of merchants are the important factors in the sale of appliances. One analysis of this kind shows the total appliance advertising in ratio to the total amount of advertising on other types of merchandise and how this ratio was divided by classes of retailers.

As an example, in 1937 the total dealer advertising in one metropolitan area was divided as follows:

Type of Merchant	*Appliance Advertising*	*Other Advertising*
Furniture Stores	35%	65%
Department Stores	7%	93%
Chain Stores	23%	77%
Hardware Stores	42%	58%

The measurement of dealer appliance advertising substitutes facts for guesswork in the promotion of the most powerful aid to sales. The advantages of such information may be briefly summarized as follows:

1. Indispensable facts on the volume of dealer advertising and the advertising practice of dealers.

2. A year-to-year ratio of the relationship between advertising and sales results.

3. Provision of ammunition for newspapers to use in the solicitation of more dealer appliance advertising.

4. Provision of knowledge of what each individual dealer is doing and decided talking point when discussing sales promotional plans with him.

TIME MARCHES ON! Five years from now, living conditions, habits and, we hope, the economic outlook will be different. If we are to keep our places in the sun and maintain our position in the march of progress, we must keep abreast of the changing conditions. If we don't, then some other industry is going to "cash in" on our share of the business. We must be continually studying our markets, watching and fostering new developments and changing our methods to meet changing conditions. The way in which this can be done is by careful and continuous market research.

Package Diesel Units and Their Future

(*Continued from page* 152)

where such power, because of excessive transmission costs or other reasons, is too expensive.

General Motors produces a wide variety of products and has many customers in every community. We believe that we enjoy the confidence of the public to a considerable degree. It would not be to our interest to abuse that confidence in any way and we cannot afford to have dissatisfied customers. We intend to aggressively merchandise our Diesel products wherever they may be used to the advantage of the prospective customer. But we will not mislead such prospective customers nor will we allow our dealers to do so.

Diesel engines cannot be profitably used by the ordinary user of electric energy as a substitute for central power plant service, providing charges for such service are based on a sound cost structure. Consideration must be given to a reasonable return on investment, the problems of operation, and the hazard of interruption to service.

Undoubtedly, many power purchasers will investigate the possibilities of Diesel power. We intend that such inquiries as may come to us will be answered on the basis of facts as we know them. We will also add a reasonable allowance of conservatism, as we have no desire to sell equipment based on a saving which can be quickly eliminated by a minor adjustment in rate.

Whether or not General Motors participates, the Diesel industry is destined to experience a rapid growth. Neither you nor we could hope to importantly impede the adoption of Diesel power for uses to which it is suited. But to avoid serious economic waste, this development should be carefully guided. The central power plant is a much better solution of our power problem than a large number of small isolated private units. But the combination, with base demand steam plants, of Diesel units, for the purpose of carrying peak loads; to supply increased demand in outlying areas for which transmission capacity may not be available; and to open up new territory in advance of the high line, are possibilities worth considering.

In certain parts of the country coal costs compare unfavorably with fuel oil costs. At lower prices per horse power and with reduced maintenance cost, large Diesel engines can be considered in replacement or expansion programs. We realize that your industry has given a great deal of consideration to these possibilities and some very interesting technical reports have been written on the subject. But the development of higher speed engines produced in considerable quantities will importantly change some of the calculations in these

earlier studies. We are prepared to discuss these matters with your engineers at any time.

In closing, let me say that it is our our opinion that the General Motors' program on Diesel engines will not injure the interests of the Electrical Utility industries. Any small volume of business which may be taken away from central power plants will be more than compensated for by the development of new demands for power and the opening of new areas first served by isolated plants and later, when requirements have expanded sufficiently, taken over by the central power plant. Competitive situations will unavoidably arise, from time to time, but neither of us need fear such competition as long as it is on a sound healthy basis.

Dealers for all General Motors' products are carefully selected and sound guidance is provided by our factory organizations.

In this new field, you may expect competition but, so far as General Motors is concerned, it will be honest competition. We shall do everything possible to insure that our products are not misrepresented.

Furthermore, we would like the opportunity to serve the Electrical Utility Industry if our products will help you to do your job better. After all, our jobs do not differ very greatly. We must both serve the public as efficiently and as economically as we know how.

Running Water

(*Continued from page* 130)

mon sense tells me plenty of water will add plenty of pounds to them also.

Farmers know these facts—at least most of them do. But like everyone else, they need to be told about it. And who is telling them about it? I was thinking, coming out—Suppose I needed a water system this Spring. Who would be telling me about it? Probably the hired man and my wife, but I doubt if anyone with one to sell would be out to see me. The tractor man would come out and the new car salesman, and the radio man, but not the water system man. In our section the water system specialty man is gone. Hardware stores and plumbers handle most of the pumps. And neither of these men get very far away from home on sales expeditions, except on hot tips. It would be up to the Utility man to put the urge on me and to tip off the pump dealer. With this kind of urging I would probably buy the pump and tell the tractor man to wait.

And then what an opening for that same Utility man. The new white kitchen sink made the old wood or coal range look bad. —New lights in the kitchen and the new bath room, maybe a water heater—and in the barn—a dairy-barn water heater, poultry water warmers, stock tank heaters, etc., etc. You have opened up the faucets for improvements on my farm; you have increased my profits to pay for these improvements. I am a damned poor American farmer if I don't climb aboard and buy your stuff.

May I suggest, as a farmer, that more than water comes into a farmer's system when he takes that first cool drink from his new water system. He gets an *inspiration* to modernize and electrify that no other appliance that he will ever buy will bring to him. It pays him big profits and it makes the next step look easy to him.

Awards Established for Acts of Valor by Utility Employees

OUTSTANDING acts of courage and devotion to duty by employees of electric light and power companies in the maintenance of electric service under adverse conditions will be recognized nationally through the recent establishment of the Claude L. Matthews Awards for Valor.

The awards cover acts of valor performed during the calendar year 1938 and will be administered by the Prize Awards Committee of the Edison Electric Institute. Three awards each of $150 are offered through the interest of Mr. Matthews to the employees selected as being most entitled to the awards on the basis of evidence submitted to the committee. A citation and appropriate button will accompany each cash award. Other awards consisting of the emblem and citation may be awarded in meritorious cases at the discretion of the judges.

Chief executives of electric light and power companies throughout the United States are invited to submit recommendations, when in their judgment acts warranting consideration for the award have been performed by an employee or employees under their jurisdiction.

The terms and conditions governing the award have been announced by Mr. H. P. Liversidge, Chairman of the Prize Awards Committee and are as follows:

THE CLAUDE L. MATTHEWS VALOR AWARDS

For acts of devotion to duty wherein extraordinary courage has been exercised in efforts to maintain important electric service or to restore service in the shortest possible time.

Three cash awards each of $150 are offered for the calendar year 1938 to the individuals selected by a group of judges (named by the Prize Awards Committee of the Edison Electric Institute), on the basis of evidence submitted, as being most entitled to the awards. A citation and an appropriate button or pin will accompany each cash award.

Others recommended for the valor award but not participating in the cash awards, at the discretion of the judges, may be given a citation and awarded the button or pin.

Where two or more employees participated in an act of valor on a basis that does not warrant singling out the acts of one individual among them above the rest, the award may be made to a group. In this case the money that would have been awarded to an individual will be divided equally among the members of the recommended group, the citation will name the group, and a button or pin will be given to each one of the recommended group.

Because circumstances evoking acts of valor may not occur in a particular year, any or all of the awards may be withheld at the discretion of the judges.

Terms and Conditions

1. *Eligibility.* Any person employed by an electric light and power company in the United States at the time the valorous deed was performed is eligible for the award.

2. *Period.* The deed of valor must have been performed during the calendar year 1938.

3. *Who to Submit Recommendations.* Recommendation for the award must be submitted by the president of the company in which the person recommended is or was employed, or, in the absence of the president, by an executive acting for him.

4. *Date for Submitting Recommendations.* All recommendations for the year 1938 must be forwarded to the secretary of the Edison Electric Institute not later than March 1, 1939. It is urged that a recommendation for the valor award be submitted as soon as convenient after the occurrence of the act of valor.

5. *Instructions Governing Recommendations.* Recommendations for valor awards

should give first a succinct citation of the courageous act of devotion to duty. This should be followed by a brief statement of the duty or duties with which the person recommended was charged at the time of the occurrence cited. Next should follow a brief description of the events that transpired and a clear statement of the specific deed or deeds upon which the claim for the award is based. A brief history of the employee's service with the company should be added. Factors that will be given weight in judging the awards will be the importance of the service effected, the courage, the good judgment, the quick action and the devotion to duty displayed by the employee.

Plant Coordination Committee Releases Report

(*Continued from page* 176)

Telephone Circuits," and "The Telephone Influence Factor of Supply System Voltages and Currents." A brief review of the principles involved in visual noise measurements is given. In addition to describing the instruments, an explanation is given of the manner in which the instruments are intended to be used and of the quantities which are measured.

Provisional Report 22—Distribution Circuit Ground Relaying Study—Oscillographic Observations. This is an interim report, to make available the results up to January 1, 1937, of a field study of distribution circuit fault characteristics and protective device performance, obtained from feeders of seven distribution systems operating at voltages ranging from 4 kv to 13 kv. Attention is devoted primarily to the performance of fuses and of circuit breakers and associated relays. The data have been analyzed also to show the frequency of occurrence, cause, magnitude, and duration of the faults.

Copies of these reports may be obtained from the Edison Electric Institute. The prices are as follows:

Engineering Report 40 ...	$.80 to members—$2.00 to non-members
Provisional Report 21 ...	.40 to members—$1.00 to non-members
Provisional Report 22 ...	.60 to members—$1.50 to non-members

Engineering Report 40 is in the form of a printed pamphlet (EEI Publication F 2); the Provisional Reports are in mimeograph form.

Please Make Your Convention Hotel Reservations Early

CONVENTIONS AND MEETINGS

APRIL

7-8	Missouri Valley Electrical Association, Engineering conference, Omaha, Neb.
7-8	Pacific Coast Electrical Association, Spring conclave, Fresno, Calif.
13-15	American Institute of Architects, New Orleans, La.
13-15	Midwest Power Conference, LaSalle Hotel, Chicago, Ill.
18-19	Arkansas Utilities Association, Eastman Hotel, Hot Springs, Ark.
18-22	Producers Council, Inc., New Orleans, La.
20-22	Missouri Association of Public Utilities, Jefferson Hotel, St. Louis, Mo.
20-23	Northwest Electric Light and Power Association, Engineering and Operating Section, Vancouver, B. C.
20-30	National Electrical and Radio Exposition, New York, N. Y.
21-23	Southeastern Electric Exchange, Annual convention, Edgewater Gulf Hotel, Biloxi, Miss.
27-30	Electrotechnical Society, Savannah, Ga.
29	Maryland Utilities Association, Annual Meeting, Lord Baltimore Hotel, Baltimore, Md.

MAY

2-5	Chamber of Commerce of the U. S. A., Washington, D. C.
2-5	Engineering Committees, Edison Electric Institute, Edgewater Beach Hotel, Chicago, Ill.
9-13	National Fire Protection Association, Atlantic City, N. J.
15-20	National Electrical Manufacturers Association, Hot Springs, Va.
22-26	National Electrical Wholesalers Association, Hot Springs, Va.
23-26	National Association of Purchasing Agents, St. Louis, Mo.
26-27	Pacific Coast Electrical Association, Annual convention, San Francisco, Calif.
27-31	Westinghouse Agent-Jobbers Association, The Homestead, Hot Springs, Va.
31	Heating Piping and Air Conditioning Contractors National Association, Boston, Mass.

JUNE

1-2	Heating Piping and Air Conditioning Contractors National Association, Boston, Mass.
6-9	*EDISON ELECTRIC INSTITUTE, Atlantic City Auditorium, Atlantic City, N. J.
20-24	American Institute of Electrical Engineers, Washington, D. C.
20-24	American Society of Mechanical Engineers, St. Louis, Mo.
22-24	Canadian Electrical Association, annual convention, Seigniory Club, Province of Quebec, Canada.

AUGUST

29-31	Rocky Mountain Electrical League, Canyon Hotel and Lodge, Yellowstone Park, Wyo.

SEPTEMBER

7-9	Pennsylvania Electrical Association, Bedford Springs Hotel, Bedford Springs, Pa.
12-15	National Electrical Contractors Association, Book-Cadillac Hotel, Detroit, Mich.
29-30	Indiana Electric Association, French Lick Springs Hotel, French Lick Springs, Ind.

OCTOBER

1	Indiana Electric Association, French Lick Springs Hotel, French Lick Springs, Ind.
3-7	National Restaurant Association, Chicago, Ill.
10-14	American Gas Association, Atlantic City, N. J.
10-14	National Safety Council, Stevens Hotel, Chicago, Ill.
24-28	National Electrical Manufacturers Association, Palmer House, Chicago, Ill.